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AUTHOR	Dunn, Winnie; Deterding, Cheryl; Dustman, Stephanie A.
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ABSTRACT

A four-year federally funded project created this resource guide and interactive multimedia computer software program that are designed to increase knowledge and skills about assistive technology for people with disabilities. Project ASTECH targets special educators, related service personnel, and others who need to learn about assistive technology. The specific areas of assistive technology included in the software are computer access, augmentative communication, and environmental control. Individuals can learn about these areas within three main modules. The first module, Exploring the Possibilities, gives an overview of these three areas by discussing the characteristics and categories of devices, by showing representative devices, and by illustrating examples of students using the devices. The second module, Assessment and Application, takes the learner through the assessment process by first giving general information about assessment. Then the module provides specific information about the aspects of motor, sensory, and cognitive performance that may affect technology support decisions. Through guided applications and student applications, learners can apply information they have learned about assessment with specific case studies. The final module, Installation, Programming, and Troubleshooting, gives general information and then applies it to representative devices. The printed 3-ring binder resource guide supplements information presented in the software program. (CR)

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Assistive Technology Training • Through Multimedia •

Resource Guide

EC 305768

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Occupation Therapy Education
The University of Kansas Medical Center
3901 Rainbow Boulevard
Kansas City, KS 66160
Winnie Dunn, Project Director
Cheryl Deterding, Project Coordinator
Stephanie A. Dustman, Project Specialist

OVERVIEW OF PROJECT ASTECH: ASSISTIVE TECHNOLOGY TRAINING THROUGH MULTIMEDIA

The Occupational Therapy Education Department in the School of Allied Health at the University of Kansas Medical Center had a four-year federal grant (#HO29K20160) funded by the Department of Education. The purpose of Project ASTECH was to create an interactive, multimedia computer software program and resource guide that would increase knowledge and skills about assistive technology. Project ASTECH targets special educators, related service personnel, and others who need to learn about assistive technology. The specific areas of assistive technology included in the software are computer access, augmentative communication, and environmental control. Individuals can learn about these areas within our three main modules (Exploring the Possibilities; Assessment and Application; and Installation, Programming and Troubleshooting).

Exploring the Possibilities gives an overview of these three areas by discussing the characteristics and categories of devices, by showing representative devices, and by illustrating students using devices. The **Assessment and Application** module takes the learner through the assessment process by first giving general information about assessment. Then the module provides specific information about the aspects of motor, sensory, and cognitive performance that may affect technology support decisions. Through guided applications and student applications, learners can apply information they have learned about assessment with specific case studies. The applications also discuss the contextual issues surrounding the students' successful use of assistive technology. The **Installation, Programming, and Troubleshooting** module gives general information and then applies it to representative devices.

This printed Resource Guide supplements information presented in the software program. It is in a 3-ring binder to allow you to include additional information that you find useful.

TABLE OF CONTENTS

Overview of Project ASTECH

Legislation 1L - 22L
- Laws Related to Assistive Technology
- Assistive Technology and the IEP
- Assistive Technology Responsibilities & Related Issues

Computers 1C - 27C
- List of Devices in ASTECH Software
- Trackball Features
- Expanded Keyboard Comparison Chart
- Mini Keyboard Comparison Chart
- Keyboard Emulator Comparison Chart
- Adaptive Firmware Card Dealers
- Dedicated Keyboard Emulators
- Voice Recognition Systems
- Abbreviation/Expansion and Word Prediction Software
- Programming Checklist
- Troubleshooting Checklist
- Switch Software
- Software Companies

Augmentative Communication 1AC - 26AC
- List of Devices in ASTECH Software
- Sorting Through Augmentative Communication
- Checklist for Overlay Design
- Programming Checklist
- Troubleshooting Checklist
- Implementation Checklist
- ASHA Position Statement and Report
- Selected Readings & Publications

Environmental Control 1EC - 16EC
- List of Devices in ASTECH Software
- ECU Chart
- Battery Interrupts
- Programming Checklist
- Troubleshooting Checklist

(Continue to next page)

Assessment 1A - 33A
- Roles of Team Members
- Assessment Areas
- Computer Access Assessment
- Augmentative Communication Assessment
- Environmental Control Assessment
- Scanning Assessment Tool

General Information 1GI - 71GI
- Resource Lists
    - Assistive Technology Companies
    - Organizations
    - State Technical Assistance Projects (TAP)
    - Alliance for Technology Access (ATA) centers
    - Selected Books & Resources
    - World Wide Web Sites
    - ADL Catalogs
- Fact Sheets on Common Disabilities

LEGISLATION

Federal legislation has an impact on the provision of assistive technology devices and services to students. Therefore, professionals providing assistive technology services to students need to be familiar with these laws. This section gives you information about these laws and their implementation. We have also included information focusing specifically on IDEA. However, IDEA is under legislative revision, so you may want to add that information to your Resource Guide as it becomes available.

There are many issues surrounding the school's responsibilities in providing assistive technology services and devices. We have included several handouts that address these issues.

Contents

Laws Related to Assistive Technology 1L - 4L
Assistive Technology and the IEP 5L - 6L
Assistive Technology Responsibilities & Related Issues 7L - 22L

THE LAW

AND ASSISTIVE TECHNOLOGY

LEGISLATION	INDIVIDUAL ELIGIBLE?	ASSISTIVE TECHNOLOGY ADDRESSED?	MAJOR ISSUES
Americans with Disabilities Act (ADA) Civil rights No funding	* physical or mental impairment which substancially limits major life activity, or * record of such impairment, or * regarded as having such impairment	Employment - "reasonable accommodations" State & Local Government Services and Public Accommodations - "auxiliary aids and services"	Undue hardship standard Personal preference vs. availability and cost
Section 504 of the Rehabilitation Act Non-discrimination No funding		*Limited to agencies who receive federal funds* Employment - "reasonable accommodations" Education - uses IDEA regulations Public services - "equal access"	See ADA and IDEA Enforcement standards
Individuals with Disabilities Act (IDEA) Funding (federal and state) Educational rights	Part B (ages 5-21) * impairment (twelve types, State establishes eligibility criteria) * which results in need for special education and related services	Elementary and Secondary Education - "assistive technology devices and services"	Medical vs. educational Appropriate vs. choice vs. best Ownership of devices Home use Payor of last resort
	Part B (ages 3-5) * developmental delay (State defined) * which results in need for special education and related services	Preschool Education - "assistive technology devices and services"	
	Part H (ages 0-3) * developmental delay (State defined), or * physical or mental condition with high probability of developmental delay	Early Intervention - "assistive technology devices and services"	
Title I - Vocational Rehabilitation Services of the Rehabilitation Act Funding (federal and state)	* physical or mental impairment causing employment impediment, * and benefit (employment outcome) from VR services, and * requires VR services for employment	Employment - "rehabiliatation technology, assistive technology devices and services, rehabilitation engineering"	Personal preference vs. availability and cost Necessary for employment
Medicaid/Medicare/Bureau Funding (federal and state)	* financial income standards	Health Care - "durable medical equipment, prosthetics, orthotics"	Medical necessity Acute care vs. long term Independence vs. care

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INDIVIDUALS WITH DISABILITIES EDUCATION ACT AND ASSISTIVE TECHNOLOGY

The Individuals with Disabilities Education Act of 1990 (IDEA), the reauthorization of Public Law 94-142 the Education for All Handicapped Children Act (EHA), specifically addresses the provision of assistive technology devices and services. The IDEA regulations, issued September 29, 1992, include the following references to assistive technology devices and services.

300.5 Assistive technology device

As used in this part, assistive technology device means any item, piece of equipment or product system, whether acquired commercially off the shelf, modified or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities.

300.6 Assistive technology service

As used in this part, assistive technology service means any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. The term includes:

(a) The evaluation of the needs of a child with a disability, including a functional evaluation of the child in the child's customary environment;
(b) Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by children with disabilities;
(c) Selecting, designing, fitting, customizing, adapting, applying, retaining, repairing, or replacing of assistive technology devices;
(d) Coordinating and using other therapies, interventions, or services the assistive technology devices, such as those associated with existing education and rehabilitation plans and programs;
(e) Training or technical assistance for a child with a disability, or if appropriate, that child's family; and
(f) Training or technical assistance for professionals (including individuals providing education or rehabilitation service), employers, or other individuals who provide services to employ, or are otherwise substantially involved in the major life functions of children with disabilities.

300.308 Assistive technology

Each public agency shall ensure that assistive technology devices or assistive technology services or both, as those terms are defined in 300.5 - 300.6 are made available to a child with a disability if required as a part of the child's

(a) Special education under 300.17;
(b) Related services under 300.16; or
(c) Supplementary aids and services under 300.550(b)(2).

300.17 Special Education

. . . means specially designed instruction, at no cost to the parents, to meet the unique needs of a child with a disability . . .

300.16 Related Services

. . . means transportation and such developmental, corrective, and other supportive services as are required to assist a child with a disability to benefit from special education . . .

300.550 (b)(20) Least Restrictive Environment - General

. . . removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily.

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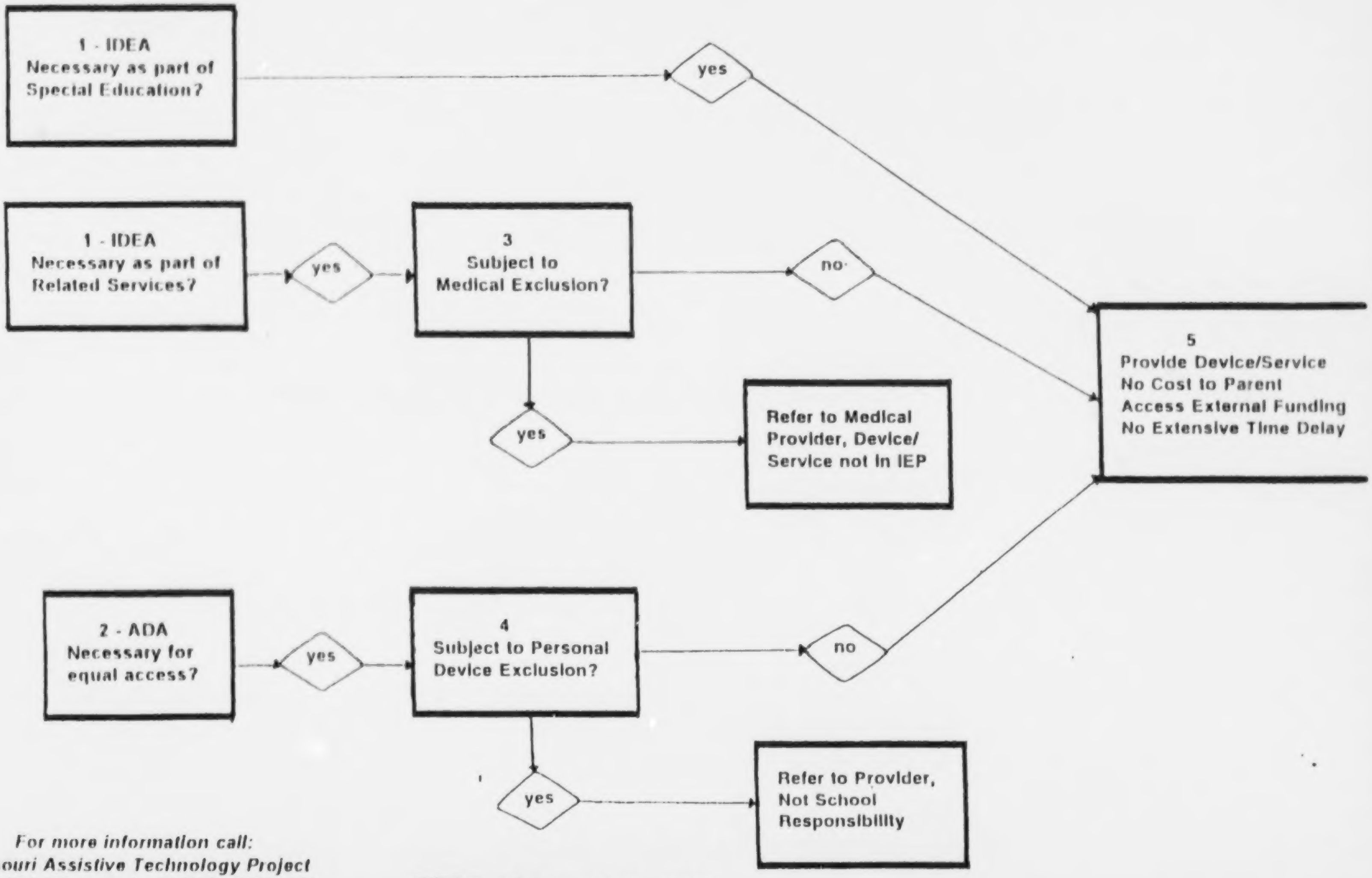
ASSISTIVE TECHNOLOGY DECISION MAKING FOR SCHOOLS

(Numbers refer to reference notes on the back)


1 - IDEA
Necessary as part of Special Education?
yes
1 - IDEA
Necessary as part of Related Services?
yes
3
Subject to Medical Exclusion?
no
yes
Refer to Medical Provider, Device/ Service not in IEP
5
Provide Device/Service
No Cost to Parent
Access External Funding
No Extensive Time Delay
2 - ADA
Necessary for equal access?
yes
4
Subject to Personal Device Exclusion?
no
yes
Refer to Provider, Not School Responsibility

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Including Assistive Technology in the IEP

With the IDEA regulations, a variety of options exist for addressing assistive technology during the IEP process. After a comprehensive evaluation has considered assistive technology needs, appropriate devices and/or services may be included in IEP goals and objectives or may be specified as part of special education, related services, and/or supplementary aids and services needed for the regular classroom.

Examples of IEP Objectives with Assistive Technology Included

Reading	Utilizing an enlarging system, the student will identify the Dolch sight vocabulary words from the first grade list.
	The student will demonstrate knowledge of following brailled directions within a given instructional reading level.
	Using an electronic communication system, the student will retell a story in their own words.
Writing	Using an electronic spell checker, the student will correct misspelled words within own compositions.
	Using a word processing program with screen-reading speech output, the student will proof-read and recognize/correct errors in word selection (words which do not represent intended meaning) within own compositions.
	The student will write familiar words (e.g. colors, numbers, names) using a writing aid.
	Using an alternative input device, the student will keyboard 12 words per minute.
	Using a writing aid, the student will sign his/her name.
Math	The student will solve two-step story problems using addition with an electronic calculation aid.
	The student will count one to ten using an abacus.
	The student will tell digital time at random five-minute intervals on a braille clock face.
Behavior	The student will report to class and complete assignments on-time using an electronic organizer.

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Strategies	While utilizing video-text translation during lectures, the student will recognize advance organizers provided by the speaker as signals of important points to be presented.
Speech/ Language	Using an assistive listening system, the student will demonstrate understanding of functional vocabulary.
	Using an electronic communication system, the student will produce two-word phrases while role playing.
	The student will use language to express own wants and needs utilizing an altenative communication system.
Leisure	The student will demonstrate the ability to participate in frisbee as a recreational activity using a disk with auditory output.
	The student will demonstrate the ability to participate in bowling as a recreational activity using a ball pusher.
Motor	The student will demonstrate the ability to ambulate with an assistive device.
	The student will demonstrate the ability to propel a wheelchair within a restricted area.
Self-Care	The student will self-dress using buttoning device and sock device.
Classroom	The student will participate in class discussions utilizing an augmentative communication system.
	The student will produce written classroom assignments utilizing an electronic writing system.
	The student will read assigned classroom material utilizing a scanning and screen-reading (with speech output) system.
	The student will read assigned classroom material utilizing a page-turning device.

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SPECIAL EDUCATION ASSISTIVE TECHNOLOGY POLICIES: MYTH OR REALITY?

Dr. Diane Cordry Golden
Missouri Assistive Technology Project

Increasing use of assistive technology to address a myriad of educational needs for students with disabilities has created a corresponding rise in assistive technology policy questions. Exactly what is a district's responsibility for providing assistive technology under IDEA? Is it different under ADA? How can a school determine if a student needs a device for an "appropriate" program. Who is qualified to decide what is "appropriate"? Are there limitations in a district's responsibility for devices that seem to be medical, or those that are personal use? Should the device go home? Who is responsible for maintenance and repair of devices? As with most areas of special education policy, there are few easy answers to these questions. Based on current OSEP policy letters, administrative and legal decisions, and other information sources, a number of guiding principles seem to be developing. Hopefully, these emerging guidelines will help schools meet their legal obligations and do what is right for kids, without causing financial ruin along the way.

The term "assistive technology" is not synonymous with expensive computer equipment.

Assistive technology (AT) includes a vast array of devices that are least often computer-based. Assistive technology includes devices to address mobility, visual, hearing, and speech limitations, along with thousands more. For each device that is computer-based there are literally hundreds that are not.

It is helpful to understand that for any task there is always a range of assistive technologies that might assist in accomplishing the desired result. For example, making print accessible to a student with a visual impairment can be done a number of ways. A low tech solution might be using a simple hand held magnifier. A high tech solution could be a scanner and speech synthesizer. The use of another student as a reader might be a "no tech" solution. The challenge of identifying appropriate assistive technology for a given student, to address a given need, in given environments requires consideration of the full continuum of options available.

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As of today, IDEA does not provide an exemption for "personal use" devices.

IDEA requires all students be provided with assistive technology as needed for delivery of a free appropriate public education (FAPE.) The only exception to this requirement is for those devices that are determined to be "medical." There is no such exception for "personal use" devices. There are a number of groups who feel that IDEA should be amended to exclude schools responsibility for providing "personal use devices." However, even if such an amendment were to occur, the interpretation of what is and is not "personal use" would be very problematic for many types of assistive technology. In many cases, it is difficult if not impossible to distinguish between a device that is "personal use" versus one that can be readjusted and used by another student. A custom seating system is not the same as the standard wheelchair on hand in most airports, but both could be considered "personal mobility systems." Would the degree of customization be a factor in the device qualifying as personal use or would any "wheelchair", no matter how generic, be considered personal use? A programmable hearing aid with an earmold made from an ear impression is much more custom fit than an assistive listening system with a volume control knob on the receiver and walkman type earphones. Would one be district responsibility and the other not? As is apparent, even if some exemption for personal use devices were added by amendment or OSEP policy interpretation, it would likely raise as many questions as it would answer.

The difference between "medically necessary" and "educationally necessary" is clear as mud.

The exemption that does currently exist in IDEA is for devices needed for medical treatment. However, in reality, many pieces of equipment are needed both for medical and educational purposes. The general guidelines established by case decisions distinguishing between medical and educational related services can be used to assist in understanding when assistive technology devices may be considered medical and thus outside of the school's responsibility. In general, the following factors seem important to consider:

> *Expertise required* -- What is the level of expertise required to deliver the device or service? If a medical doctor typically delivers the assistive technology, it is more likely to be considered medical than if delivered by non-M.D. professionals.
>
> *Intrusiveness* -- What is the level of intrusiveness of the device or service? The more intrusive, the more likely it is to be considered medical. Devices that are surgically implanted would be ones that are very physically intrusive that would likely be considered medical rather than educational.

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Delivery environment -- What environment is the device/service delivered? If it can only be delivered in a hospital, it is more apt to be determined medical than if it can be delivered at home, school or other settings.

As indicated previously, many devices are needed for both medical and educational purposes. In a perfect world, those that are medically necessary would be provided by an entity other than the school as a "payor of first resort." Unfortunately, not all children have access to coverage for medically necessary assistive technology. Some students have no medical insurance and others are insured by private policies which do not pay for assistive technology. Access to basic coverage for medically necessary AT is inconsistent at best. For those students who are Medicaid eligible, medically necessary AT is covered. Schools are well advised to understand the Medicaid procedures in their state and provide case management support to assist families access all Medicaid covered AT. Similar case management is helpful when a private insurer will cover AT. Schools might also want to consider advocating for full medical coverage for all children. If all medically necessary AT were provided by other entities, schools could focus their attention on those devices that are educationally necessary. Unfortunately, it doesn't work that way. When a device can be considered medical or educational, special education is the system with the clear statutory requirement to provide not the medical system.

Determining if a device is required for FAPE is no easy task.

The differentiation between when a device is absolutely required for FAPE versus when the device is beyond the basic floor of "appropriate" can be extremely difficult. This situation frequently arises with the use of a computer for instruction. The computer may have no adaptations and is simply being used as a method of instruction. Is the computer use necessary for FAPE or would another instructional medium be equally effective?

In addition, the standard of equal access from the Americans with Disabilities Act (ADA) and Section 504 may need to be considered. While FAPE for a blind student may be met by providing all written materials on audio cassette and by transcribing all dictated writing assignments, these same provisions might not meet an equal access standard. If for example, the student was expected to produce a term paper based on a set of audio cassette reference materials, the lack of access to a braille, "hard copy" of the reference materials would limit the student's ability to cross-reference and do other similar reviews that can be done by students with a print version of the materials. If all other students were able to use computers with word processing to prepare their papers, and no adaptations allowed the blind student to use word processing, the student would be limited in their ability to review and revise their written work. This is likely to be seen as a lack of equal access.

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Deciding a student needs assistive technology is only the beginning.

Deciding that a student needs assistive technology for FAPE is only the beginning of the issues that should be discussed and addressed within the IEP. Depending upon the IEP team discussions, the IEP may indicate that the student will be using a screen reading and highlighting system (a general description) or the IEP might specify that the student will use *SoundProof* which is a specific "brand name" screen reading and highlighting system. There are a number of such systems and districts must understand that if they specify a name brand, that is what they have obligated themselves to provide. There are reasons to specify a particular brand and reasons to use a more general description. Whatever the decision, it should be made purposefully based on the situation at hand, not done from a lack of information or misperceptions (e.g. the IEP team thought all screen reading systems were called *SoundProof*.)

If a device is specified in the IEP, then the device must be available and must be functioning properly. If it is not available or is not working, the district is failing to properly implement the IEP as written. This is no different than specifying that a student will receive physical therapy and then not providing it. If an IEP specifies a device that another agency (such as Medicaid) is funding, the district cannot legally wait for that agency to procure the device. If it is in the IEP, it must be provided as IDEA requires, as soon as possible after the development of the IEP. Most states have guidelines regarding what "as soon as possible" means, but in no case will waiting for an external funding source to finish its process be acceptable.

Repair and maintenance of a device specified in an IEP should also be considered during the IEP development. How will a loaner or alternative systems be provided to assure that the IEP can continue to be implemented if and when the device needs repair? If the IEP specifies a device as needed for FAPE and it has been provided by the family, an insurance carrier, Medicaid, or other source, the district is responsible for assuring that the device is working properly even though it is not district owned.

Schools must consider the student's need for device use at home to achieve goals and objectives as specified on the IEP. If a student needs a device to produce homework assignments or to read assigned text, there is no question that the device must be available for home use, or the district must have another alternative available to allow the student to accomplish the activities. While it is clear that schools cannot limit devices to in-school use only, it is also clear that all devices available at school do not have to be sent home. The decision must be made based on the educational and instructional activities to be completed outside the school setting.

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The field of assistive technology has no clear credentialing standards.

There is no such thing as a state license or teaching certificate that allows an individual to "prescribe" assistive technology. Given the vast array of devices, it is very unlikely that there never will be one credential for assistive technology. Even trying to set up a system whereby certain types of equipment are "prescribed" by an individual with a specific credential is riddled with problems. With the exception of a very limited number of devices, most assistive technology is not "prescribed." While it might make sense to require that an audiologist recommend and fit a specific hearing aid, it is not logical to extend that concept to the requirement that an audiologist must recommend a specific TTY for an individual. The decision regarding which assistive listening system to purchase for a school might be based on information about a number of options provided by an audiologist with the final decision made by the school given the size of room, the numbers of students who will use the receivers, etc. So while an audiologist's "prescription" might be a reasonable requirement to acquire some types of hearing-related devices, it would not be logical for all or even most.

In the area of computer access, there simply is no such thing as a credential that qualifies an individual to provide a "prescription" for computer access. One individual who is knowledgeable about adaptations for individuals with visual impairments may have no expertise in adaptations for persons with mobility limitations. Not all occupational therapists have training in computer adaptations, while some do.

The area of augmentative communication is one of the most convoluted with respect to credentialing. Speech language pathologists, occupational therapists, special educators and others lay claim to qualifications for "prescribing" augmentative systems. Augmentative communication systems are no different from any other area of assistive technology. There are devices within the continuum that tend to be more prescriptive than others and while some systems can be very personal and customized, others (like a picture book for ordering at McDonalds) can be very generic and used by more than one student.

A very wise person once said that the piece of assistive technology that is "right" for a person is the one they use. No formal evaluation procedures and resultant prescription should ever be given more weight than common sense, that is what the student chooses to use and seems to work.

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Training, training, and more training . . .

Educational staff need to be knowledgeable and current on AT issues. Trained staff will be able to participate in good decision making about what is appropriate for students. Training will not create an overflow of requests for assistive technology. Quite the opposite, when staff is knowledgeable about the full range of AT, they can effectively evaluate the need for devices and can address misconceptions about AT, such as the most expensive is always the best. With training staff will be able to show that in many cases appropriate AT is cost effective and may eliminate the need for expenditures on human supports for students.

With training, school staff can critically consider the student's needs in the classroom for AT use. No outside evaluator will ever be able to make the same observations that those who work with the student day in and day out in the school environment can make. Frequently, the best way to collect information about which device might be most appropriate is to have a student use the device in the school environment. A formal evaluation might be used to narrow the choices down to a few devices, then a less formal assessment can be done by trying out devices. While securing devices for a trial period can be difficult, in the long term trying devices can save dollars by reducing purchases that turn out to be inappropriate and unused. Some schools have cooperatively developed lending libraries of equipment to use for try-out and assessment purposes.

Focus on the positive.

As we approach the year 2000, technology will continue to advance and offer more options for students with disabilities. The use of AT has allowed students with disabilities to achieve outcomes previously thought impossible. Very little is as satisfying as seeing a student previously non-verbal, communicating for the first time or a student previously dependent on a human reader, reading text independently through the use of AT. Hopefully educational personnel can look past the quagmire of policy controversy and aggressively seek to deliver AT for all the right reasons, because of its positive impact on student achievement.

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Ten Assistive Technology Realities

REALITY #1: Determining when a device is needed for FAPE (free appropriate public education) is no easy task.

REALITY #2: There is no cookbook for including AT in an IEP.

REALITY #3: There is no IDEA exemption for personal use devices.

REALITY #4: The difference between "medically necessary" and "educationally necessary" is clear as mud.

REALITY #5: If its in the IEP, the school MUST make sure the device is available and functioning properly . . . regardless of who paid for or owns the device (school, family, Medicaid, etc.)

REALITY #6: If you name a specific brand name device in an IEP, that is the device the school is obligated to provide.

REALITY #7: Schools cannot limit AT to in-school only use . . . but not all devices available at school must go home.

REALITY #8: A computer is not the answer to every AT need . . .

REALITY #9: There is no magic wizard with all the AT expertise and certainly no AT credential that makes someone an expert in all areas of AT.

REALITY #10: AT is not going to go away or become any less complex . . . so get informed and comfortable with it as soon as possible.

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ASSISTIVE TECHNOLOGY: IS IT MEDICAL OR EDUCATIONAL?

Prior individualized cases dealing with the determination of services as either medical or educational have used a number of standards as described below. While none of the cases from which these were drawn were specific to assistive technology, the concepts are likely to be those used in deciding a medical versus education assistive technology question.

- ***EXPERTISE/COMPETENCE REQUIRED***
  What is the level of expertise/competence required to deliver the device or service? If a physician **must** deliver the assistive technology, case law suggests it will be considered a medical service and excluded as a related service. Assistive technology delivered by individuals other than physicians are less clear and seem to be influenced by other factors.

- ***INTRUSIVENESS***
  What is the level of intrusiveness of the device or service? The more intrusive, the more likely it is to be considered medical. Devices that are surgically implanted would be examples of ones that are very physically intrusive that would likely be considered medical.

- ***DELIVERY ENVIRONMENT***
  What environment is the device/service delivered? If it can only be delivered in a hospital, it is more apt to be determined medical than if it can be delivered at home or school or other settings.

- ***PURPOSE***
  Is the device or service required to sustain life or needed to attain developmental or educational goals? The more life sustaining, the more likely the assistive technology is to be determined to be medical.

- ***LIABILITY/RISK***
  What is the liability and risk assumed by the school in providing the assistive technology? If for example, the device breaks down or the service provider is ill and the assistive technology cannot be delivered is the situation life threatening? The greater the liability and risk, the more likely the assistive technology may be considered medical.

- ***BURDEN***
  What is the burden on the school district if the assistive technology is provided? Time and expense have both been included as factors in the consideration of burden. If the assistive technology device or service is close to a level of "virtual constant care" it may be considered medical.

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School Responsibility for Maintenance of Assistive Technology Under IDEA

Q: Are school districts responsible for the costs of maintaining, repairing, or replacing a student's assistive technology device, even if it is not school-owned?

When an assistive technology device is part of a student's Individualized Education Plan (IEP), the school has the responsibility for making certain the device is available for purposes of implementing the student's IEP. In most cases, the school is liable for the costs of maintenance, repair, or replacement of the device even when it is not owned by the school.

The Office of Special Education Programs (OSEP), in response to a request from the Illinois Assistive Technology Project, addressed this issue in a 1994 policy letter. The request involved an augmentative communication device which parents of a student purchased so that their son was "able to access the device continually" rather than being limited to use for IEP-designated activities only.

In its letter, OSEP stated, "...*if the device that the parents have agreed to furnish is no longer in working order, and therefore is no longer available for purposes of implementing the student's IEP, the public agency is responsible for either continuing to implement the student's IEP by providing a substitute device, or for reconvening the student's IEP team for purposes of reviewing the student's IEP, and if appropriate, revising its provisions.*" In other words, the district has only two options: provide a fully operational device as written in the IEP (either repair the existing device or replace it with an equivalent one) or revise the IEP.

Under the Individuals with Disabilities Education Act (IDEA), a school district is responsible for providing assistive technology devices that are part of a child's special education, related services, or supplementary aids and services. The device is to be provided at no cost to parents. If the parents in this case had not purchased the device specified in their child's IEP, the school district would be responsible *for both providing and maintaining* the device.

The OSEP letter recognizes that there may be some situations in which having the school assume liability for a non school-owned device may "create a greater responsibility for the public agency than the responsibility that exists under federal law". For example, a school could choose to use a family-owned captioning decoder to allow a student to watch instructional television programming at school. However, since this decoder would receive much use at home for "non-IEP" purposes, the school may not want to use it to meet IEP

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needs and thus assume liability for its overall maintenance. Rather, it may be more effective for the school to own a decoder that could be used at school and sent home only when the student was assigned to watch a program during off-school hours.

With both school-owned devices and those that schools are obligated to maintain, school personnel are frequently concerned about damage that may occur off school property, since they have limited ability to oversee the care and use of the device once it leaves the school. Regardless of these concerns, the mandate to provide devices off-property is clear. Schools cannot limit devices to in-school use because of anticipated or real fears of damage. Rather, schools must examine the specified IEP goals necessitating the equipment leave school, consider all equipment alternatives, and then provide that which is needed for FAPE. As with all decisions related to assistive technology, each must be made on a case-by-case basis considering the unique educational needs of the student.

Whatever the approach, the basic responsibility for the school still remains: assure access to working equipment as needed per the IEP. Depending on the circumstances, a school may choose to assume maintenance liability of a non-school owned device, or it may be more effective for the school to own a duplicate or comparable device for which it retains sole ownership and maintenance responsibility, rather than becoming entangled in maintaining equipment that it doesn't own.

To receive a copy of the OSEP policy letter or if you have questions about other assistive technology issues, contact:

Missouri Assistive Technology Project
4731 South Cochise, Suite 114
Independence, Missouri 64055-6975
Phone: 800-647-8557 (voice) or 800-647-8558 (TT).

16L

School Responsibility to Provide Computers Under IDEA

Q: When is it the responsibility of a school to provide computer equipment at school or at home to a student with a disability?

It should come as no surprise that the school's responsibility depends on the individual characteristics and needs of the student. As with the provision of any type of assistive technology, decisions about computers must be made on a case-by-case basis. In the process of writing an Individualized Education Program (IEP), the IEP team must consider if and when assistive technology is necessary to meet educational goals and objectives. By asking some questions, the process can be made a bit more manageable.

Is computer equipment necessary for the student to receive a free **appropriate** public education (FAPE)? In *Board of Education v. Rowley*, the U.S. Supreme Court said that the "appropriate" of FAPE is a basic floor of opportunity consisting of access to specialized instruction and related services designed to provide educational benefit to the child with a disability. Thus the question focuses on "appropriate" rather than "best."

It may be useful to distinguish between *computer equipment needed for communication (to access or produce oral or written communication*) versus *computer equipment to be used solely as an instructional medium (in the same way that books, flash cards, loop tape records, etc. are used).* Even the latter differentiation can be muddied in cases such as the student with a learning disability who needs spell checking software to produce print well, but whom can certainly write (pencil and paper) without a computer.

Computers for Communication Access

In the case of students who need alternatives to access or produce written/oral communication, the IEP team must consider all options including computer based. For a blind student, options to access and produce print might include tape recording, brailling (hard copy), reader (human assistance), and a computer system utilizing scanning, screen-reading (voice output), braille output, etc. The IEP team should ask which option or options are appropriate for meeting the instructional objectives. If more than one option is appropriate, in which situations should an alternative be used? Minimally the IEP team should specify the alternative(s) to be used at school and home in light of the instructional objectives and expectations in each setting.

One caution, a school cannot lower expectations for a student at home or school due to the need for alternative access. It would not be acceptable to waive some homework assignments for students who need alternative access or production if the homework assignments are required of other students.

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When choosing between alternatives for access, the standard for "appropriate" might include the following questions:

- Will one or more alternatives allow the student to be independent rather than relying on human assistance?
- Will one or more alternatives allow the student to be educated in a less restrictive environment (LRE)?
- Will one or more alternatives allow for truly equal access in terms of student time and effort? (Producing a book report by dictating, transcribing, revising by dictating, etc. is not equal to producing one on computer with a word processor.)

If the computer based system is the option that allows for independence, LRE, and truly equal access, it may well be the (or one of the) alternatives needed to meet the "appropriate" standard.

Computers for Instruction

Most, if not all, students with and without disabilities could benefit from the use of computer-based instruction at school and home. Schools are not required by IDEA to provide access to educational benefits beyond what is provided to students without disabilities. For example, a school would probably not be required by IDEA to provide a computer with instructional software *for the purpose of providing a means of home instruction* to a student with a learning disability. Home enrichment of instruction that was provided at school via computer is not likely to be considered a part of FAPE. However, if a computer and software were the only alternative for the student to be able to complete practice drills that were also assigned as homework for other students, the equipment must be provided.

As with access options, the IEP team must consider all alternatives for instructional media from traditional curricular materials such as books, worksheets, and flash cards, to more high-tech options that are computer based. The IEP team should ask which option or options are appropriate for meeting the instructional objectives and if more than one option is appropriate, in which situations should an alternative be used? The challenge is one of clarifying instructional objectives and expectations for both school and home so that a determination of appropriate media can be made.

In summary, computer systems must be viewed as one tool among many to be considered in meeting the access and instructional needs of students with disabilities; a tool that should always be considered as an option, should never be considered as the only option, and one that must be provided if necessary for FAPE.

For more information, contact: **The Missouri Assistive Technology Project, 4731 South Cochise, Suite 114, Independence, Missouri, 64055-6975. Phone: 800/647-8557 (Voice) or 800/647-8558 (TT).**

Can assistive technology aids or equipment be limited to in-school use? A policy letter from the federal Office of Special Education Programs (OSEP) clearly states *no.*

An OSEP policy letter was sent in response to a parent who had asked that her child's school provide a CCTV for his use at home. The CCTV (closed-circuit television) is an electronic enlarging device that enlarges images and increases contrast. The student was visually impaired, and needed the device for completing homework, reading books, and finishing any assignments from school.

> The policy letter, dated November 1991, stated **"If the Individualized Education Program (IEP) team determines that a particular assistive technology device item is required for home use in order for a particular child to be provided FAPE (free appropriate public education), the technology must be provided to implement the IEP."**

School systems cannot categorically deny any request that assistive technology go home, for reasons including the lack of adequate property insurance coverage. Each decision must be made on a case-by-case basis, recognizing each child's strengths and weaknesses in an educational context.

A school's responsibility for providing assistive technology at home is limited to those devices which are needed for a student to pursue his or her educational objectives. Schools may offer other alternatives to allow for activities to be performed at home rather than providing assistive technology so long as such alternatives are appropriate.

For example, alternatives that might allow a student with a vision impairment to access print at home could be to provide all materials in large print or on audio cassette in lieu of providing a CCTV for home use. Similarly, for a student who is unable to write, an adapted computer may be used to generate print, while another alternative might be for the student to dictate assignments. **Decisions regarding which alternative is appropriate must consider the educational activities to be performed or completed at home.** In the example of the student unable to write, dictation might be appropriate for short daily assignments, but inappropriate for longer written work. Again, decisions about providing assistive technology at home must be made on a case-by-case basis.

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ISSUES IN ASSISTIVE TECHNOLOGY

When is it a school's responsibility to provide an assistive technology device for a student when it is considered a personal device, such as a hearing aid?

When a school determines that a child with a disability requires a device in order to receive a free appropriate education, and when the child's IEP specifies that the child needs the device, the school has a responsibility to provide the device. This is true even when the device is a personal device such as a hearing aid.

This policy was clarified in a policy letter from the Office of Special Education Programs (OSEP) issued November 19, 1993. The letter explained that in the past, it had been OSEP's position that a school was not required to purchase a hearing aid for a student who was deaf or hard of hearing because a school was not responsible for providing a personal device. However amendments in 1990 to the Individuals with Disabilities Education Act (IDEA) added the terms "assistive technology device" and "assistive technology service" to the language of IDEA.

The definition of "assistive technology device" is "any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities". Personal use devices such as hearing aids, wheelchairs, and augmentative communication systems and other such devices are covered under this definition. Again, the question is no longer whether the device is a personal use device, but whether it is needed by the student to receive a free appropriate public education.

In addition, under IDEA, a school must ensure that assistive technology devices and assistive technology services, or both, are made available to a child with a disability if required as part of a child's education, related services, or supplementary aids and services. As such, when the IEP team has determined that a device, even those such as hearing aids, are needed for a child to receive a free appropriate public education, the school is responsible for providing the device at no cost to the child and his or her parents.

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Under what conditions can a school require parents to use their insurance to pay for assistive technology devices that are needed for the child's education?

Parents do NOT have to make use of their health insurance if they would incur any financial loss in the process. Schools are required to provide a free appropriate public education to students. This means that devices or services related to a child's education must be provided by the school "without charge" or "without cost".

The U.S. Department of Education issued a regulation on this issue in the *Federal Register* on December 30, 1980. It states that proceeds of insurance must not be taken by school districts when parents will face a realistic threat of financial loss. Financial loss includes, but is not limited to, the following:

- ☐ an increase in premiums or the discontinuation of the policy; or
- ☐ an out-of-pocket expense such as the payment of a deductible or percentage of coinsurance incurred in filing a claim; or
- ☐ a decrease in available lifetime coverage or benefit under an insurance policy.

Issues for Parents

While the above policy is very clear, there are some issues to consider in its implementation:

- ▲ Are parents given all of the factual information in order to make an informed decision?
- ▲ Are parents led to believe that without insurance payments, less service will be provided to their child?
- ▲ Are parents feeling intimidated to sign over their insurance?
- ▲ Are parents feeling "guilty" that if they don't sign, they will be hurting their child?

Many children will incur extensive medical costs due to illness or injury over the years in which they are enrolled on their parent's medical insurance. Therefore, parents should think carefully prior to allowing their private insurance to be billed for special education-related services of local school districts.

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4731 South Cochise, Suite 114
Independence, Missouri 64055-6975
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800-647-8558 (TT)

Some excerpts for this publication provided from Allan Berman, Governmental Activities Office, United Cerebral Palsy Associations, Inc.

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There has been a long delay in the school providing assistive technology for my child while the school is searching for outside funding sources. Must a child wait for the device until the school locates a funding source?

If the IEP team has determined that an assistive device or service is necessary for a child's free appropriate public education (FAPE), the school has an obligation to provide the assistive technology. It is permissible for the school to seek funding from outside sources (such as a charitable organization, agency, local corporation, etc.) to help pay for the device or service. However, the search for funding cannot delay implementation of a child's IEP.

The Office of Special Education Programs (OSEP) has addressed the issue in a policy letter relating to assistive technology. The letter states that "no delay is permissible between the time a child's IEP is finalized and when special education and related services is provided". The letter explains that there are some circumstances which require a short delay (e.g. working out transportation arrangements or an IEP meeting which occurs during the summer). However, the intent of the law and regulations is quite clear. Services set out in the IEP will be provided beginning immediately after the IEP is finalized. This may necessitate renting or leasing a device while seeking alternative funding sources.

Can a school make parents responsible for locating a funding source for educationally related assistive technology?

If it has been determined that an educationally-related device is needed for a student, the district cannot require a child's parents to be responsible for locating funding sources. The district can request the involvement of the parents in the funding search, but it is the responsibility of the district to find a means of providing the device, not the parents. Devices or services related to a child's education must be provided by the school without charge or without cost to the parents. Also, remember that if external funding cannot be arranged, the district still must provide the device as specificed in the IEP.

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COMPUTERS

The Project ASTECH software explores computer input and output devices, discusses assessment, and introduces installation, programming and troubleshooting strategies. We have compiled a list of each device mentioned in the Project ASTECH software and the companies that distribute these devices for your use. In our software program it would be impossible to include information about every available device on the market. Our purpose was to give you categories and characteristics of devices with representative examples. You are encouraged to add information about other devices to your Resource Guide.

We have included some specific information to assist you in the search for the correct computer access match for your students. As you find more information, you can add it to this 3-ring binder. One handout we have included discusses different features of trackballs. The expanded keyboard, mini keyboard, and keyboard emulator comparison charts included in the Project ASTECH software were reproduced to give you quick access to this information.

In the Project ASTECH software, we discussed keyboard emulators, focusing on flexible keyboard emulators. We have included, in this Resource Guide, information about the the Adaptive Firmware Card, even though it is no longer produced because you may be in a school district which has Apple IIe computers. We have also included examples of dedicated keyboard emulators, along with the input device or method with which they are used.

You learned about voice recognition as one input option in the Project ASTECH software, so we have listed specific voice recognition systems along with the companies who distribute them. Although you learned about characteristics of abbreviation/expansion and word prediction software in the ASTECH program, we did not list specific products in our software. Therefore, we have listed several products for your information and use. We encourage you to get demo software whenever possible.

The programming, troubleshooting, and implementation checklists you learned about in the Project ASTECH software also are included for your future use.

Project ASTECH does not discuss specific software that may be appropriate for students. Because we feel that this information may be useful for school-based personnel, we have included a list of software and software companies.

Computers

List of Devices in ASTECH Software 1C - 2C
Trackball Features 3C
Expanded Keyboard Comparison Chart 4C
Mini Keyboard Comparison Chart 5C
Keyboard Emulator Comparison Chart 6C
Adaptive Firmware Card Dealers 7C
Dedicated Keyboard Emulators 8C
Voice Recognition Systems 9C
Abbreviation/Expansion and Word Prediction Software 10C
Programming Checklist 11C
Troubleshooting Checklist 12C
Switch Software 13C - 24C
Software Companies 25C - 27C

LIST OF DEVICES - COMPUTERS

We have mentioned devices as representative examples within our software program. Here is a list of those devices and the companies from which they may be purchased. These companies also sell other products that you may be interested in. The companies' addresses and phone numbers are listed in the General Information section of this Resource Guide.

Device	**Company**
AccessDOS	IBM
Accessibility Options	Comes with Windows '95
*AccessPack for Windows™	Microsoft
Adaptive Firmware Card™	Don Johnston, Inc.
Big Red® switch	AbleNet, Inc.
Braille Blazer printer	Blazie Engineering
Braille 'n Speak	Blazie Engineering
*CloseView	Apple computers (comes with Macintosh computers)
DADA Entry	TASH Inc.
Darci Too®	WesTest Engineering Corp.
DECtalk™	AbleNet, Inc.
*DragonDictate	Dragon Systems, Inc.
*EasyAccess (includes MouseKeys & StickyKeys)	Apple computers (comes with Macintosh computers)
Echo™ voice synthesizer	Echo Speech Corp.
Ellipse 1 switch	Don Johnston, Inc.
Ellipse 3 switch	Don Johnston, Inc.
Head Master™	Prentke Romich Company
Head Mouse	Madenta
*inLARGE	Berkeley Access
IntelliKeys™	IntelliTools, Inc.
Jelly Bean® switch	AbleNet, Inc.
Ke:nx™	Don Johnston, Inc.
Ke:nxOn:Board®	Don Johnston, Inc.
Key Largo™	Don Johnston, Inc.
Left/Right Rocker switch	Don Johnston, Inc.

MacMini Keyboard	TASH Inc.
Magic Wand	In Touch Systems
Mounting switch	Don Johnston, Inc.
MultiVoice ™	Institute on Applied Technology
Muppet Learning Keys™	Sunburst Communications
Overlay Maker™	IntelliTools, Inc.
P-switch™	Prentke Romich Company
PC Master Screen Reader	Blazie Engineering
PC Mini Keyboard	TASH Inc.
Plate switch	Don Johnston, Inc.
Power Pad™	Dumamis, Inc.
*PowerSecretary™	Articulate Systems, Inc.
Rocking Lever switch	Prentke Romich Company
Tash Mini Keyboard	TASH Inc.
Tongue switch	Prentke Romich Company
Touch Window®	Edmark Corporation
Tracker	Madenta
Tread switch	Zygo Industries, Inc.
**Unicorn Keyboard™	Don Johnston, Inc., IntelliTools, Inc.
VoiceType	IBM
Wobble switch	Prentke Romich Company

*denotes software
**no longer produced

Trackball Features

✓Access

How much space does the trackball require? Does it interfere with other activities (i.e., typing, answering phone, weight shifts)? How is the trackball plugged in, installed and activated? Can this be done by user or others in environment easily?

✓Mounting

How will the trackball be mounted?? Is it within the user's arc of accessible activation? Does it need to be adjusted vertically? If so, will the ball fall out of trackball, slip out of place when not being used or still work when trackball is mounted at 45-90 angle (note, many balls don't calibrate correctly when angled)?

✓Compatability

Does the make and model of trackball work with the make and model of computer and software being used? Can it be adapted to work across several setups if needed? Is it compatible with user's access mode (i.e., hands, typing aides, mouthsticks, etc.)?

✓Buttons

How many buttons are they and what do they do? Where are they located? How are they activated (method and force needed)? How wide, long and deep are they? Can they moved/adjusted? if so, how?

✓Button to ball ratio

How far are the buttons from the ball (distance) and does this fit user's activation mode? Are buttons at same height as ball? Can user use ball and buttons with minimal amount of movement? Are buttons accidentally activated when using ball or vice versa?

✓Balls

What kind of ball is used for tracking? How big is it and does this fit user's activation mode? How smooth is the glide and can it be adjusted (i.e., loosen or tighten springs)? How is it attached to trackball?

✓Drag/lock feature/button programability

Can one of the buttons be programmed to act as a drag lock so user does not have to hold button and roll ball at same time? Can this feature be easily turned on or off by user?

✓Software options

Does software come with the trackball to customize its use? Is it compatible with current computer system, applications, and other pieces of assistive technology being used? Can macros (multiple step operations combined into a few actions), "hotspots" (commonly used locations on screen) and buttons be programmed? Can speed of tracking and clicking be adjusted via software? Can software be easily turned on/off?

✓Cost and availability

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Expanded Keyboard Comparison Chart

	Unicorn™	IntelliKeys™	Ke:nx On:Board®	KeyLargo™
Larger keys than regular keyboard	X	X	X	X
Can be customized	X	X	X	X
Keyboard emulator needed	X			X
No keyboard emulator needed		X	X	
Slight angle & wrist rest			X	X
Use with Apple™ IIe & IIGS	X	X		X
Use with Macintosh™	X	X	X	X
Use with IBM™/Compatible	X	X		X

Taken from Project ASTECH software

Occupational Therapy Education
The University of Kansas Medical Center
Kansas City, Kansas

Taken from Project ASTECH software

Mini Keyboard Comparison Chart

	Tash Mini	Mac Mini	PC Mini	Magic Wand
Smaller keys than regular keyboard	X	X	X	X
Can be customized	X			
Keyboard emulator needed	X			
No keyboard emulator needed		X	X	X
Use with Apple™ IIe & IIGS	X			
Use with Macintosh™	X	X		X
Use with IBM™/Compatible	X		X	X

Taken from Project ASTECH software

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Keyboard Emulator Comparison Chart:

(Note: This is not an endorsement of devices. Due to their cost, you are advised to use the device or talk to someone with experience before purchasing one.)

	AFC™	Ke:nx™	DADA Entry	Darci Too®
Must install card inside the computer	X			
Use with Apple™ IIGS	X			X
Use with Macintosh™		X		X
Use with IBM™/Compatible			X DOS	X

Occupational Therapy Education
The University of Kansas Medical Center
Kansas City, Kansas

Adaptive Firmware Card Dealers

Even though the Adaptive Firmware Card™ is no longer produced, some school districts or families may still be using it. Others may have Apple IIe computers that they want to use, but need an Adaptive Firmware Card™ to use it with an adapted access device. Therefore, we have included two sources that sell the Adaptive Firmware Card™.

Don Johnston, Inc.
P.O. Box 639
1000 N. Rand Rd, Building 115
Wauconda, IL 60084

Nahum Sloan
Director, Centralized Equipment Pool
Toronto, Ontario
Ph. 416-447-5771
417-447-2493
e-mail: nsloan@mail.cepp.org
As of June 1996, a large number of new and used cards were available at $75.00.

Apple IIe computers can still be purchased from
Sun Remarketing Inc.
P.O. Box 4059
Logan, UT 84323-4059
800-821-3221
sales@sunrem. com

Selected Dedicated Keyboard Emulators

The ASTECH software differentiates between flexible keyboard emulators (which allow a variety of input devices to be used) and dedicated keyboard emulators (which typically allow one type of input device to be used). Here is a chart which lists some dedicated keyboard emulators and the type of input device or method that is used. We have also included if the emulator is used with an IBM/compatible or Macintosh computer. To get more information regarding the company that sells the product, look at the company listing in the General Information section of this Resource Guide.

CrossScanner (IBM, MAC)	Switch-Scanning	RJ Cooper and Associates
Discover:Switch (MAC)	Switch-Scanning	Don Johnston Inc.
Expanded Keyboard Emulator (EKE) (IBM)	Expanded Keyboard	Words+, Inc.
Freedom Writer (IBM)	Switch-Scanning	World Communications
Handicode (IBM)	Switch-Morse code	Microsystems Software, Inc.
HandiKey (IBM)	Switch-Scanning	Microsystems Software, Inc.
Help U Key (IBM)	Switch-Scanning	World Communications
Morse Code WSKE (IBM)	Switch-Morse code	Words+, Inc.
Revolving Doors (MAC)	Switch-Scanning	Madenta
Scanning WSKE (IBM)	Switch-Scanning	Words+, Inc.
WinSCAN (IBM)	Switch-Scanning	Academic Software, Inc.
WiViK2 (IBM)	Switch-Scanning	Prentke Romich Co.

Voice Recognition Resources

Following is a list of voice recognition or voice input systems that can be used for computer access. There are also some Macintosh® computers that have limited voice recognition capabilities. Prices for these voice recognition systems were correct as of 1996.

Voice Input System	Company	Compatibility	Price
DragonDictate	Dragon Systems	Windows & DOS	$395-1995.00
IBM VoiceType Dictation	IBM	Windows & OS/2	$990.00
Power Secretary	Articulate Systems	Macintosh & Windows	$990-2495.00

Abbreviation/Expansion and Word Prediction Software Resources

Following are a list of software programs which allow the user to use abbreviation expansion (AE) and word prediction (WP) to increase the rate they can input information into the computer. See the Vendors List, also in the ASTECH Resource Guide, for company addresses and phone numbers. Most companies have demo software available upon request.

SOFTWARE	AE or WP	COMPANY	COMPATIBILITY
AURORA	WP	Aurora Systems Inc.	IBM/PC
CO:WRITER	WP	Don Johnston, Inc.	Macintosh
E Z KEYS	AE, WP	Words + Inc.	IBM/PC
HANDIWORD AND HANDIWORD DELUXE	AE	Microsystems Software Inc.	IBM/PC
HELP U TYPE	AE, WP	World Communications	IBM/PC
KEYREP	WP	Prentke Romich Co	IBM/PC
KEYWIZ	AE, WP	Words + Inc.	IBM/PC
PREDICT IT	WP	Don Johnston, Inc.	Apple II
PRD+	AE	Productivity Software International	IBM/PC
QUICKEYS 3.5	AE	CE Software Inc.	Macintosh
SCANNING WSKE II	AE, WP	Words + Inc.	IBM/PC
TALKING SCREEN	AE, WP	Words + Inc.	IBM/PC
TELEPATHIC	WP	Madenta Communication, Inc.	Macintosh
TEMPO II +	AE	Affinity Micro Systems Ltd.	Macintosh
TEMPO EZ	AE	Affinity Micro Systems Ltd.	Macintosh
TEMPO SHORTCUTTER	AE	Affinity Micro Systems Ltd.	IBM/PC
TYPE IT 4 ME		Apple site on the World Wide Web at www2. apple.com/disability/ shareware.html	Macintosh

COMPUTER GENERAL PROGRAMMING STEPS*

Programming is the completion of specific steps with equipment to enable students to do something they could not do before. When we discuss programming with computers, the desired result is that students will have a custom setup (overlay or scanning array) to use with their alternate input device. Although there are many alternate input devices, there are 7 general steps that apply to programming most of them.

Programming Steps (when using an overlay)

1. **Analyze software** to determine what keys and mouse commands are used to operate the software program.
2. **Plan the printed overlay**
   consider:
   - what student sees
   - what student hears
   - key arrangement on overlay in terms of size, location, display and feedback
3. **Program the overlay**
   a. create keys
   b. add text and/or picture labels to keys that will appear on the printed overlay
   c. program the key content (i.e., information sent to the computer when the student presses the key on overlay)
4. **Save the overlay**
5. **Print a paper copy of the overlay**
6. **Load, or send, the overlay to the expanded keyboard**
7. **Try the overlay** and make changes, if necessary.

You will find these general programming steps apply to most alternate input devices, however, programming steps may be more complex when programming some alternate input devices and devices that require certain keyboard emulators.

* Taken from Project ASTECH software

COMPUTER GENERAL TROUBLESHOOTING STRATEGIES*

Troubleshooting is a strategy used to locate and correct a problem. When using an alternate input device, a common problem you may encounter is you press a key on the overlay/keyboard and nothing happens or the wrong keys appear on the screen.

General Troubleshooting Checklist:

Device ______________________
Company Name ______________________
Company Phone # ______________________
Date ______________________
Problem ____

Is the device turned on?

Is the correct cable used?

Is the cable securely plugged in?

If you are using an expanded keyboard, is there a problem with the overlay?

Make sure that you have only one overlay installed on the keyboard .

If using a standard overlay, make sure the bar code on the back of the overlay is not covered or damaged.

If you are using a custom overlay, make sure that the correct overlay has been sent/loaded to the keyboard .

After using these general troubleshooting strategies, if the device still does not work correctly do the following:

- Check the device manual for more detailed, specific troubleshooting strategies.
- Call the company. Make sure you have the device in front of you when you call.

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* Taken from Project ASTECH software

TOWARD DEVELOPMENT OF A SWITCH TRAINING HIERARCHY

(MUSSELWHITE, 1990)

BEGINNING CAUSE EFFECT: Large simple graphics with movement; typically, screen would blank between activations

Fireworks (*Fireworks/Blocks/Car)*
Happy Faces (*New Cause Effect*)*
Music & Boxes (*New Cause Effect*)*
Switches, Pictures, & Music*
Funny Noises (*New Cause Effect*)*
Master Blaster (*ACTT*)
Switch 'n See (*ACTT*)
Cause Effect Clown (*AU*)

INTERMEDIATE CAUSE EFFECT: medium-sized graphics with less bold movement; screen does not blank between activations

Blocks (*Fireworks/Blocks/Car*)*
Dancer (*New Cause Effect*)*
R J's Switch Progressions (*RJCooper*)
This Is The Way (*UCLA--Switch PP*)
Join the Circus (*Dev Equip*)
Switch It--Change It (*UCLA*)
Reading Magic Lib-AFC<space>(*AU*)
Car (*Fireworks, Blocks/Car*)*
Jimmy Jumper (*page turn; ECS*)
Zoo Time (*UCLA --Switch PP*)
Switch Surprise (*WCC Software*)
Mr/Mrs Potato Head/Antics (*Hart*)
Switch It -- See It (*UCLA*)

ADVANCED CAUSE EFFECT: small graphics or small movement; no blanking between activations

Creature Antics (*Dev Equip*)
Jimmy Jumper (*activations; ECS*)
Slot Machine (*Slot Machine, etc)*
Creature Chorus (*Dev Equip*)
RJ's SwitchProgressions(*RJCooper*
Explore A Classic (*AU*)

MAINTAINING SWITCH ACTIVATION: Holding switch down causes action to continue

Dancer (*New Cause Effect*)*
Happy Faces (*New Cause Effect*)*
Kaleidoscope (*Slot Machine,etc*)
Switches, Pictures, and Music*
Funny Noises (*New Cause Effect*)*
Stickybear Opposites (*Dev Equip*)
Switch 'n See (*ACTT*)

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SWITCH RELEASE: Activation does not begin until switch is released

Dancer (*New Cause Effect*)*
Funny Noises (*New Cause Effect*)*
RJ's Switch Progressions (*R J Cooper*)
Feet w/ AFC/<ret> (*BertaMax*)
Dinosaurs (*UCLA*)
Rockets to the Moon (*UCLA*)*
Fast Food Game (*UCLA*)

STEP SCANNING: One press yields one action on screen (e.g., game token moves one space; scanning arrow moves one position)

Big & Small (*Access Unlimited*)
Dinosaurs (*UCLA*)
Rabbit Scanner (*Access Unlimited*)
Rockets to the Moon (*UCLA*)
Car (*Fireworks/Blocks/Car*)
First Letter Fun (*MECC*)
Scanning with Academics*
Sharon's Sampler (*Find Jack-AU*)

BEGINNING TIMED ACTIVATION: User must activate (or deactivate) switch to achieve response

Anti-Aircraft (*New Cause Effect*)*
Rabbit Scanner (*Access Unlimited*)
Ship (*New Cause Effect*)*
Stop That Cow (*New Cause Effect*)
Learn to Scan (*Dev Equip*)
Switch Games*
Eensy Weensy Spider (*UCLA*)
Scanning with Academics*
Sight Words (*UCLA*)
Make It In Time (*Dev Equip*)
The Scanning Game*
Scanning Fun (*AU*)

EARLY TWO SWITCH USE: User has two switches, each of which provides a specific input to the computer*

Interaction Games (*selected; DE*)
Scanning w/ Academics (*Maze*)*
Switch Games/Pinball*
Facemaker - AFC<space/ret>

* *Public Domain*

SOFTWARE UPDATE

MONSTERS & MAKE-BELIEVE PLUS (Pelican or AU -- $59.95): This disk provides a range of activities, including: manipulating monster parts to create a monster, write a "Monster Myth", save monsters and myths, print monsters or myths in different sizes (miniature, tall, skinny, big, etc.). Three features that make it particularly exciting for children with special needs are: 1) Large print option for children with visual impairment, or children at a distance from the computer; 2) Voice output to read a word or an entire page; 3) Printed versions of all monster parts, so children can attempt to match a model.

HUMAN BEING MACHINE (R.J. COOPER: Try Before You Buy -- $75): This program allows single switch or TouchWindow users to create a crazy body (*Build a Body*) or a silly face (*Looney Goonies*). All creations can be printed. A great intro to timed switch activation, or a super mainstreaming activity.

EXPLORE A STORY SERIES (AU -- $39.95): This series offers story writing with animation. A number of screens are available, with backgrounds and characters that can be written about "as is" or modified and animated. Graphics and animation are excellent. A sub-category is the *Explore A Classic* series, with animated versions of old favorites such as *The Three Little Pigs*.

SILLY SANDWICH (UCLA -- $25): This PowerPad program allows users to build a "silly sandwich" by choosing from 6 or 12 items. Two levels: I= select any item; II=memory game (items presented disappear, next player must choose it). Excellent game for teamwork, memory, and sequencing.

SWITCHES, PICTURES, AND MUSIC (PD): A switch press yields bold pictures and children's music. Options: levels of music feedback, choice of 11 songs and 13 pictures. Bold graphics for beginning switch users.

M.A.C. SERIES (PD): Matching, picture vocabulary programs, with each disk presenting a category (e.g., clothes, foods). Range of presentation features can be changed, such as level (# of foils), automatic scan, dwell time. Variety of schedule features can also be altered, such as reinforcement schedule, instruction schedule, and criterion for correct. Nice graphics and intelligible speech.

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USEFUL ADDRESSES

ABLE-NET, 360 Hoover Street, N.E., Minneapolis, MN 55413. Sells switches, switch interface, etc. Excellent technical support and workshops.

ACCESS UNLIMITED - SPEECH ENTERPRISES, 3535 Briarpark Dr, Suite 102, Houston, TX, (713-781-7441). Supports development of software, videos, etc., disseminates information, hardware, and software (generic and special needs), provides excellent training.

ACTT (ACTIVATING CHILDREN THROUGH TECHNOLOGY), 27 Horrabin Hall, Western Illinois U., Macomb, IL 61455 (309) 298-1014. Develops range of software plus resource materials.

BURKHART, LINDA, 8503 Rhode Island Avenue, College Park, MD 20740. Develops a wide range of light-tech to high-tech materials, including switches, books, and joystick replacer box.

CLOSING THE GAP, P.O. Box 68, Henderson, MN 56044. Disseminates infromation, books, newsletter, and supports major conference.

DEVELOPMENTAL EQUIPMENT, P.O. Box 639, Wauconda, IL 60084 (800-999-4660). Sells range of computer peripherals (TouchWindow, AFC) plus special needs software.

DUNAMIS, 3620 Highway 317, Suwanee, GA 30174 (800-828-2443). Provides extensive support for PowerPad, plus selling other peripherals, special needs software, and providing a range of workshops.

EXCEPTIONAL CHILDREN'S SOFTWARE, P.O. Box 487, Hays, KS 67601. Sells software including *Jimmy Jumper* series.

HART, INC, 320 New Stock Road, Asheville, NC 28804 (800-222-9149-NC; 800-654-8012 outside NC). Sells extensive range of generic software.

INVO-TEK, Engineering Research Center, 700 W. 20th Street, Fayetteville, AR, 72701 (501) 575-7659. Developed *TalkingEyePointBoard*

KEY TECHNOLOGIES, P.O. Box 1997, Morganton, NC 28655 (704-433-5302). Southeastern distributor for range of technology products from Zygo, Dev. Equip. Numerous workshops.

MECC, MINNESOTA EDUCATIONAL COMPUTING CONSORTIUM, 3490 Lexington Ave, N., St Paul, MN 55126 (800-228-3405, ext 693). Over 200 educational programs developed and marketed.

R.J. COOPER, 24843 Del Prado, Suite 283, Dana Point, CA, 92629 (714) 240-1912. Develops software for children and adults with severe physical and/or cognitive disabilities.

REACH, INC., 890 Hearthstone Dr., Stone Mountain, GA, 30083. Sells Switch PowerPac

TOYS FOR SPECIAL CHILDREN, Steven Kanor, 385 Warburton Avenue, Hastings-on-Hudson, NY, 10706 (914-478-0960). Toys and computer interfaces, such as multiple switch box.

UCLA MICROCOMPUTER TEAM, 1000 Veteran Ave., Room 23-10, Los Angeles, CA 90024 (213-825-4821). Develops excellent programs for PowerPad, single switch, TouchWindow.

Apple II Switch Update '96

Software Title	Source	Level	Software Title	Source	Level
E=Early Childhood, P=Primary, S=Secondary			E=Early Childhood, P=Primary, S=Secondary		
Simple Switch Activities	ACTT	E	Signs Around You	Edmark	P,S
Switch 'n See	ACTT	E	Letter Recognition Skillbuilder	Edmark	E,P
One-Switch Paintbrush	AC	E,P,S	Series:		
AFC Custom Scans	DJE	E,P,S	Begins with ABC	Edmark	E,P
Interaction Games I	DJE	E,P,S	Learning the Letters	Edmark	E,P
Interaction Games II	DJE	E,P,S	Reading Primer	Edmark	E,P
Join the Circus	DJE	E,P	Number Skillbulder Series:	Edmark	E,P
Learn to Scan	DJE	E,P,S	Number Concepts	Edmark	E,P
Make It Happen	DJE	E,P,S	Number Recognition	Edmark	E,P
Make It In Time	DJE	E,P,S	Simple Addition	Edmark	E,P
Make It Scan	DJE	E,P	School Activity Skillbuilder Series:	Edmark	E,P,S
Motor Training Games	DJE	E,P,S	Classroom Activities I	Edmark	E,P,S
Rabbit Scanner	DJE	E,P	Classroom Activities II	Edmark	E,P,S
Reactions	DJE	E,P	Cooking Activities I	Edmark	E,P,S
Run Rabbit Run	DJE	E,P	Cooking Activities II	Edmark	E,P,S
Switch Ensemble	DJE	E,P,S	School Activities	Edmark	E,P,S
Adventures of Jimmy Jumper	ECS	E,P	School People	Edmark	E,P,S
Further Adven. of Jimmy Jumper	ECS	E,P	Touch Money	Edmark	P,S
Rabbit Scanner	ECS	E,P	Vocabulary Skillbuilder Series:	Edmark	E,P
Run Rabbit Run	ECS	E,P	Animals	Edmark	E,P
Community Activity Skillbuilder	Edmark	E,P	Clothing &Body Parts	Edmark	E,P
Series:			Food and Eating	Edmark	E,P
Community Activity	Edmark	E,P	Household Furniture &Tools	Edmark	E,P
Community People	Edmark	E,P	People, Family and Holidays	Edmark	E,P
Family	Edmark	E,P	Places & Transportation	Edmark	E,P
Outside Activities	Edmark	E,P	School	Edmark	E,P
Communication Board Skillbuilder	Edmark	E,P,S	Toys and Things	Edmark	E,P
Early Concepts Skillbuilder Series:	Edmark	E,P	Kennedy Handi-Math Program	FCH	P,S
Find It!	Edmark	E,P	Kennedy Switch Key Software	FCH	P,S
Listen	Edmark	E,P	Mac-Apple Communications Aid	x (II+)	
Match It	Edmark	E,P	Bozon's Quest	Laur.	E,P,S
Touch It	Edmark	E,P	Concentrate on Words and Concepts	Laur.	E,P,S
What's the Difference?	Edmark	E,P	Concentrate on Words&Concepts II	Laur.	E,P,S
What Goes?	Edmark	E,P	Concentrate on Words&Concepts III	Laur.	E,P,S
What's Up?	Edmark	E,P	Creature Antics	Laur.	E,P,S
UH-OH!	Edmark	E,P	Creature Capers	Laur.	E,P,S
Edmark LessonMaker	Edmark	E,P,S	Creature Chorus	Laur.	E,P,S
Edmark LessonMaker: Graphics	Edmark	E,P,S	Creature Features	Laur.	E,P,S
and Words Set	Edmark	E,P,S	Creature Magic	Laur.	E,P,S
Functional Word Series	Edmark	P,S	Early Emerging Rules: Negation	Laur.	E, P
Fast Food/Restaurant Words	Edmark	P,S	Early Emerging Rules: Plurals	Laur.	E, P
Grocery Words	Edmark	P,S	Early Emerging Rules:Prepositions	Laur.	E, P
Job/Work Words	Edmark	P,S	Exploring First Verbs	Laur.	E,P,S

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Compiled by: Molly Shannon, OTR/L E-Mail contact: ccac@CMS.K12.nc.us

Apple II Switch Update '96

page 2 Apple Switch Update

Software Title	Source	Level	Software Title	Source	Level
E=Early Childhood, P=Primary, S=Secondary			E=Early Childhood, P=Primary, S=Secondary		
Exploring First Words	Laur.	E,P,S	Mix 'n Match	Marble.	E,P,S
Exploring First Words II	Laur.	E,P,S	Money Skills	Marble.	E,P,S
First Categories	Laur.	E,P,S	A Trip to the Zoo	Marble.	E,P
First Verbs	Laur.	E,P,S	Build-a-Scene	RJ	E,P
First Verbs:Spanish	Laur.	E,P,S	Adult Switch&TouchWindow Progr.	RJ	S
First Words	Laur.	E,P,S	Children's Switch&TW Progressions:	RJ	E,P
First Words II	Laur.	E,P,S	Early and Advanced Switch Games	RJ	E,P
Following Directions: 1&2 Level	Laur.	E,P,S	Human Being Machine	RJ	E,P
Following Directions: Left &Right	Laur.	E,P,S	Point to Pictures &Picture Scanner	RJ	E,P
Let's Go to the Circus (IIGS only)	Laur.	E,P,S	RadSounds (IIGS only)	RJ	E,P,S
Micro-LADS Series: French	Laur.	E,P	Spell-a-Word	RJ	E,P
Micro-LADS Series: English	Laur.	E,P	Teenage Switch&TW Progr.	RJ	S
Module1:Noun Plurals...	Laur.	E,P	2+2	RJ	P
Module2: Verb Forms	Laur.	E,P	**Public Domain Switch Software:key below**		
Module 3: Prepositions	Laur.	E,P	ABC and Numbers for Switch	COESS	1
Module 4: Pronouns	Laur.	E,P	Alphabet Book	COESS	1
Module 5: Negatives	Laur.	E,P	AlphaSwitch	COESS	1
Module 6: Wh Questions, Passive	Laur.	E,P	CAT's Single Switch Activities	COESS	1
Module 7: Prepositions II	Laur.	E,P	Fire Organ	COESS	1
My House: Language A.D.L.	Laur.	E,P,S	Keyboard Colors	COESS	1
My School: Language A.D.L.	Laur.	E,P,S	My Computer Picture Book	COESS	1
My Town: Language A.D.L.	Laur.	E,P,S	New Cause and Effect	COESS	1
Readable Story: Birthday Surprise	Laur.	E,P	Single Switch Activity Program	COESS	1
Readable Story: The Puppet Show	Laur.	E,P	Sparkee	COESS	1
Readable Story: The Hidden Toy	Laur.	E,P	Switch Access Music	COESS	1
Sentence Master Level 2	Laur.	E,P,S	Switch Games	COESS	1
Sentence Master Level 3	Laur.	E,P,S	Switches, Pictures and Music	COESS	1
Sentence Master Level 4	Laur.	E,P,S	Switches, Pictures and Rock	COESS	1
Simple Sentence Structure	Laur.	E,P	Switch Pik	COESS	1
Twenty Categories	Laur.	E,P,S	White Lodge Early Learning Modified	COESS	1
Words and Concepts	Laur.	E,P,S	All About Shapes	COESS	2
Words and Concepts II	Laur.	E,P,S	Barbara's Motor Training Games	COESS	2
Words and Concepts III	Laur.	E,P,S	Dragon Modifications 1.2	COESS	2
Cause 'n Effect	Marble.	E,P	Early Childhood I	COESS	2
Early Learning Series	Marble.	E,P,S	Lord Roberts Scanning	COESS	2
Early Learning I	Marble.	E,P,S	Picture Scanner	COESS	2
Early Learning II	Marble.	E,P,S	Scanning Game	COESS	2
Early Learning III	Marble.	E,P,S	Single Switch Starter Kit	COESS	2
Early Learning 3.5	Marble.	E,P,S	Special Needs: Basic Skills	COESS	2
Graphic Speller, The	Marble.	P,S	Special Needs: Communication Disk	COESS	2
Marblesoft Crosswords	Marble.	P,S	Textalker Scan Program	COESS	2
Marblesoft Crosswords Data Disk	Marble.	P,S	Wordscan II	COESS	2

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Compiled by: Molly Shannon, OTR/L E-Mail contact: ccac@CMS.K12.nc.us

18C

page 3 Apple Switch Update

Software Title	Source	Level
E=Early Childhood, P=Primary, S=Secondary		
Numberswitch Collection:	COESS	3
Shapes	COESS	3
Animals	COESS	3
Snacks	COESS	3
Numbers	COESS	3
Transportation	COESS	3
Clothing	COESS	3
Purdy's Writer	COESS	3
Test Talker	COESS	3
Single Switch Games Vol.1	COESS	4
Switch Games	COESS	4
Switch Pinball Games	COESS	4
Switch Trivia!	COESS	4
Beginning Adaptive SW. Appl.	COESS	5
Entrap	COESS	5
Free Calculator	COESS	5
Story Talker	COESS	5
Switch Calculator	COESS	5
Tot Lingo 1.1	COESS	5
• COESS PUBLIC DOMAIN LEVEL KEY•		
(1)Cause and Effect		
(2)Early Scanning Training		
(3) Language Devl.		
(4) High Cognitive Games		
(5) High Cognitive Education		
AFC Custom Scans	TLL	E,P,S
Cause& Effect I Public Domain Pkg.	TLL	E,P
Cause& Effect II Public Domain Pkg.	TLL	E,P
Emerging Literacy	TLL	E
Learn to Match	TLL	P
Public Domain Special Ed Software	TLL	E, P
Single Switch Learning Beginning	TLL	E,P,S
Single Switch Learning Intermediate	TLL	E, P
Word Picture Match	TLL	P, S
Big Little I	UCLA	E,P
Big and Little II	UCLA	E,P
Early Concepts	UCLA	E,P
Eency-Weency Spider	UCLA	E,P
Getting Clean w/Herkimer:IIGS only	UCLA	P
Getting Clean w/Herkimer 2:IIGS	UCLA	P
Getting Clean w/Herkimer 3 :IIGS	UCLA	P,S
Let's Go Shopping: Toys & Groceries	UCLA	E,P

Software Title	Source	Level
E=Early Childhood, P=Primary, S=Secondary		
Let's Go Shopping II: Clothes &Pets	UCLA	E, P
Pick-a-Meal	UCLA	E, P, S
Pic Talk	UCLA	E, P, S
Rockets to the Moon	UCLA	E,P
Scan-It Switch-It (IIGS only)	UCLA	E,P,S
Seasons (IIGS only)	UCLA	E,P
Sight Words (IIGS only)	UCLA	E,P
Switch Arcade (IIGS only)	UCLA	E,P,S
Switch-It Change-It	UCLA	E
Switch-It See-It	UCLA	E,P,S
The Dinosaur Game	UCLA	E,P
The Fast Food Game	UCLA	E,P
Where is Puff?	UCLA	E,P

Sources:	
ACTT	309.298.1014
Adaptive Computers (AC)	518.434.8860
Colorado Easter Seal Soc. (COESS)	303.233.1666
Don Johnston Incorporated (DJ)	800.999.4660
Edmark	800.426.0856
Exceptional Children's Soft. (ECS)	913.832.1850
Franciscan Children's Hospital (FCH)	617.254.3800
Laureate (Laur.)	800.562.6801
Marblesoft (Marble.)	612.755.1402
RJ Cooper & Associates (RJ)	800.RJCOOPER
TLL	516.625.4550
UCLA	310.825.4821

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Compiled by: Molly Shannon, OTR/L E-Mail contact: ccac@CMS.K12.nc.us

Mac Switch Update 1996

Software Title	Sources	Level	Software Title	Sources	Level
E=Early Childhood, P=Primary, S=Secondary			E=Early Childhood, P=Primary, S=Secondary		
One Switch Paintbrush	AC	E,P,S	Millie's Math House (CD)	Edmark	E,P
Dino-Dot	ASI	E, P	Sammy's Science House	Edmark	E,P
Dino-Find	ASI	E, P	Sammy's Science House (CD)	Edmark	E,P
Dino-Like	ASI	E, P	Stanley's Sticker Stories	Edmark	E,P
Dino-Maze	ASI	E, P	Thinkin' Things 1	Edmark	E,P
Multi-Scan	ASI	E, P	Thinkin' Things 1 (CD)	Edmark	E,P
Sw. Adaptable Games I (coop.)	COESS	P,S	Thinkin' Things 2	Edmark	P
Sw. Adaptable Games II (coop.)	COESS	P,S	Thinkin' Things 2 (CD)	Edmark	P
Catch the Cow:Scanning Trainer	Comp.	E	Thinkin' Things 3 (CD)	Edmark	P,S
A Day at Play	DJ	E,P	Trudy's Time & Place House:CD	Edmark	E,P
aMAZEing Ways	DJ	E,P	Words Around Me (CD)	Edmark	E,P,S
Big:Calc	DJ	P,S	ClickIt!	Intell.	E,P
Camelephant	DJ	E,P	Concentrate!On Words&Concepts	Laureate	E,P,S
Camp Frog Hollow (CD)	DJ	E,P	Concentrate!On Words... II	Laureate	E,P,S
CircleTime Tales	DJ	E,P	Concentrate!On Words...III	Laureate	E,P,S
CircleTime Tales Deluxe (CD)	DJ	E,P	Creative Cartoons	Laureate	E
Discover:Switch	DJ	E,P,S	Creature Antics	Laureate	E
Eensy and Friends	DJ	E,P	Creature Capers	Laureate	E
Forgetful and Friends	DJ	E,P	Creature Chorus	Laureate	E
Games 2 Play	DJ	E,P,S	Creature Features	Laureate	E
Gateway Stories	DJ	E,P	Creature Magic	Laureate	E
Gateway Stories II	DJ	E,P	Early Emerging Rules Series	Laureate	P
Gateway Authoring	DJ	E,P,S	Negation	Laureate	P
Hit n' Time	DJ	E,P	Plurals	Laureate	P
Idea Builder (add scan buttons)	DJ	E,P, S	Prepositions	Laureate	P
Jokus Faces	DJ	E,P	First Categories	Laureate	E,P,S
K.C.& Clyde in Fly Ball	DJ	E,P	First Words I	Laureate	E,P,S
Out and About	DJ	E,P	First Words II	Laureate	E,P,S
Pippi Longstocking (CD)	DJ	E,P	Spanish First Words I orII	Laureate	E,P,S
Press to Play-Animals	DJ	E,P,S	Exploring First Words	Laureate	E,P,S
Press to Play-Speedy	DJ	E,P,S	Exploring First Words II	Laureate	E,P,S
Switch Intro	DJ	E,P,S	Exploring First Verbs	Laureate	E,P,S
StoryTime Tales	DJ	E,P	First Verbs	Laureate	E,P,S
Talk:About (some scanning)	DJ	E,P,S	Bilingual(English/Spanish)	Laureate	E,P,S
Toystore	DJ	E,P	Spanish First Verbs	Laureate	E,P
Vidur Viking (CD)	DJ	E,P,S	MicroLAD Complete	Laureate	P
Workshop (CD)	DJ	E,P	MicroLAD Module 1	Laureate	P
Baby Bear Series	Dunamis	E	MicroLAD Module 2	Laureate	P
Bailey's Book House	Edmark	E,P	MicroLAD Module 3	Laureate	P
Bailey's Book House(CD)	Edmark	E,P	MicroLAD Module 4	Laureate	P
KidDesk	Edmark	E,P	MicroLAD Module 5	Laureate	P
KidDesk (CD)	Edmark	E,P	MicroLAD Module 6	Laureate	P
Millie's Math House	Edmark	E,P	MicroLAD Module 7	Laureate	P

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page 2 Mac Switch Update

E=Early Childhood, P=Primary, S=Secondary		
My House: Language A.D.L.	Laureate	E,P,S
Bilingual Version	Laureate	E,P,S
Mi Casa (Spanish)	Laureate	E,P,S
My School: Language A.D.L.	Laureate	E,P,S
Bilingual Version	Laureate	E,P,S
Mi Escuela (Spanish)	Laureate	E,P,S
My Town: Language A.D.L.	Laureate	E,P,S
Bilingual Version	Laureate	E,P,S
Mi Pueblo (Spanish)	Laureate	E,P,S
Sentence Master Level 1	Laureate	P,S
Sentence Master Level 1 (CD)	Laureate	P,S
Sentence Master Level 2	Laureate	P,S
Sentence Master Level 2 (CD)	Laureate	P,S
Sentence Master Level 3	Laureate	P,S
Sentence Master Level 3 (CD)	Laureate	P,S
Sentence Master Level 4	Laureate	P,S
Sentence Master Level 4 (CD)	Laureate	P,S
Simple Sentence Structure	Laureate	P
Swim,Swam, Swum	Laureate	P
Talking Nouns I	Laureate	E,P,S
Talking Nouns II	Laureate	E,P,S
Talking Verbs I	Laureate	E,P,S
Twenty Categories	Laureate	E,P,S
Words & Concepts I	Laureate	E,P,S
Bilingual Version	Laureate	E,P,S
Spanish Words & Concepts	Laureate	E,P,S
Words & Concepts II	Laureate	E,P,S
Bilingual Version	Laureate	E,P,S
Spanish Words &Concepts II	Laureate	E,P,S
Words & Concepts III	Laureate	E,P,S
Bilingual Version	Laureate	E,P,S
Spanish Words &Concepts III	Laureate	E,P,S
Speaking Dynamically	MJ	E,P,S
101 Animations	RJ	E,P
2+2	RJ	P
Adult Switch Progressions	RJ	S
Build-a-Scene	RJ	E,P
Children's Switch Progressions	RJ	E,P
Early&Advanced Switch Games	RJ	E,P,S
Find the Buttons	RJ	E,P
Human Being Machine	RJ	E,P
Point to Pictures/Pic. Scanner	RJ	E,P
RadSounds	RJ	E,P,S

E=Early Childhood, P=Primary, S=Secondary		
Spell-A-Word	RJ	E,P
Teen Switch Progressions	RJ	S
Turn-Talking	RJ	E,P
Away We Ride	RJ/Kid	E,P,S
Best of KidTech	RJ/Kid	E,P
Old MacDonald's Farm	RJ/Kid	E,P
Five Little Ducks	RJ/Kid	E,P
Make It Go	RJ/Kid	E,P
Monkeys Jumping on the Bed	RJ/Kid	E,P
My Action Book	RJ/Kid	E,P
Teen Tunes	RJ/Kid	P,S
Turtle Teasers	RJ/Kid	E,P
The Rodeo	RJ/Kid	E,P
New Frog and Fly	SimTech	E,P
One Switch Picasso	SimTech	E,P
Scan and Match Series	SimTech	E,P,S
Scanning Picasso	SimTech	E,P
Switch Arcade	SimTech	E,P
Switch Puzzles	SimTech	E,P
Listen With Your Ears	UCLA	P,S
Scan It-Switch It	UCLA	E,P,S
This Old Man	UCLA	E,P
Wheels on the Bus Complete	UCLA	E,P
Resources:		
Adaptive Computers (AC)	518.434.8860	
Academic Software,Inc.	606.231.0725	
Co. Easter Seal Soc. (COESS)	303.233.1666	
Computerade (Comp.)	619.630.4591	
Don Johnston, Inc. (DJ)	800.999.4660	
Dunamis	800.828.2443	
Edmark	800.426.0856	
Intellitools	800.899.6687	
Laureate	800.562.6801	
Macomb	309.298.1634	
Madenta	800.661.8406	
Marblesoft	612.755.1402	
Mayer-Johnson	619.550.0084	
RJ Cooper /KidTech	800.RJCooper	
SimTech	203.567.1173	
UCLA	310.825.4821	

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PC Switch Update 1996

Software Title	D	W	Level	Source
E=EC, P=Prim.,S=Sec./Adult			D=DOS,W=Win	
Dino-Dot	x		E,P	ASI
Dino-Find	x		E,P	ASI
Dino-Maze	x		E,P	ASI
Dino-Like	x		E,P	ASI
WinScan		x	P,S	ASI
Best Faces	x		E,P	Best
KeyWi		x	S	CCT
One Access	x		P,S	CCT
Trace Math Aid	x		P,S	CHPI
A Day at Play		x	E,P	DJ
Camp Frog Hollow(CD)		x	P,S	DJ
Eensy and Friends		x	E,P	DJ
Forgetful and Friends		x	E,P	DJ
Idea Builder		x	E,P,S	DJ
Out and About		x	E,P	DJ
Press to Play: Animals		x	P,S	DJ
Press to Play: Speedy		x	P,S	DJ
Switch Clicker Plus		x	E,P,S	DJ
Bailey's Book House	x		E,P	Edmark
Bailey's Book House (CD)	x	x	E,P	Edmark
KidDesk		x	E,P	Edmark
Millie's Math House	x	x	E	Edmark
Millie's Math House (CD)	x	x	E	Edmark
Sammy's Science House	x		E,P	Edmark
Sammy's Science House (CD)	x		E,P	Edmark
Stanley's Sticker Stories (CD)		x	E,P	Edmark
Thinkin' Things I (&CD)	x	x	E,P	Edmark
Thinkin' Things II(&CD)		x	P	Edmark
Thinkin' Things III (&CD)		x	P,S	Edmark
Trudy's Time&Place (CD)		x	P	Edmark
Gus! Talking Keyboard		x	E,P,S	Gus
WriteAway	x		P,S	IAT
Cause and Effect	x		E,P	JL
Fundamental Concepts	x		E,P	JL
Switch Art	x		E,P	JL
Visual Motor	x		E	JL
Concentrate:Words&Concepts	x		P,S	Laureate
Concentrate: Words &..II	x		P,S	Laureate
Concentrate: Words &.. III	x		P,S	Laureate
Creative Magic	x		E	Laureate
Creature Antics	x		E	Laureate
Creature Capers	x		E	Laureate
Creature Chorus	x		E,P	Laureate

Software Title	D.	W	Level	Source
E=EC, P=Prim.,S=Sec./Adult			D=DOS,W=Win	
Creature Features	x		E	Laureate
Early Emerging Rules: Negation	x		P	Laureate
Early Emerging Rules: Plurals	x		P	Laureate
Early Emerging Rules:Prep.	x		P	Laureate
Exploring First Verbs	x		P,S	Laureate
Exploring First Words	x		P,S	Laureate
Exploring First Words II	x		P,S	Laureate
First Categories	x		P,S	Laureate
First Verbs	x	x	P,S	Laureate
First Verbs: Spanish	x		P,S	Laureate
First Verbs: Bilingual	x		P,S	Laureate
First Words	x	x	P,S	Laureate
First Words: Spanish	x		P,S	Laureate
First Words: Bilingual	x		P,S	Laureate
First Words II	x	x	P,S	Laureate
First Words II: Spanish	x		P,S	Laureate
First Words II: Bilingual	x		P,S	Laureate
Let's Go to the Circus	x		E,P	Laureate
Micro-LADS Series: English	x		P	Laureate
Module1:Noun Plurals...	x		P	Laureate
Module 2: Verb Forms	x		P	Laureate
Module 3: Prepositions	x		P	Laureate
Module 4: Pronouns	x		P	Laureate
Module 5: Negatives	x		P	Laureate
Module 6:Wh-?,Passive,Deictic	x		P	Laureate
Module 7: Prepositions II	x		P	Laureate
My House: Language A.D.L.	x		E,P,S	Laureate
Spanish Version: My House	x		E,P,S	Laureate
Bilingual Version: My House	x		E,P,S	Laureate
My School: Language A.D.L.	x		E,P,S	Laureate
Spanish Version: My School	x		E,P,S	Laureate
Bilingual Version: My School	x		E,P,S	Laureate
My Town: Language A.D.L.	x		E,P,S	Laureate
Spanish Version: My Town	x		E,P,S	Laureate
Bilingual Version: My Town	x		E,P,S	Laureate
Sentence Master Series		x	P,S	Laureate
Sentence Master 1 (&CD)		x	P,S	Laureate
Sentence Master 2 (&CD)		x	P,S	Laureate
Sentence Master 3 (&CD)		x	P,S	Laureate
Sentence Master 4 (&CD)		x	P,S	Laureate
Simple Sentence Structure	x		P	Laureate
TalkTime with Tucker	x		E,P	Laureate
Talking Nouns I	x		P,S	Laureate

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PC Switch Update 1996

page 2 PC Switch Update

Software Title E=EC, P=Prim.,S=Sec./Adult	D	W	Level	Source D=DOS,W=Win
Talking Nouns II	x		P,S	Laureate
Talking Verbs	x		P,S	Laureate
Twenty Categories	x		P,S	Laureate
Words and Concepts I	x		E,P,S	Laureate
Words&Concepts: Spanish	x		E,P,S	Laureate
Words&Concepts:Bilingual	x		E,P,S	Laureate
Words and Concepts II	x		E,P,S	Laureate
Words&Concepts II: Spanish	x		E,P,S	Laureate
Words&Concepts II:Bilingual	x		E,P,S	Laureate
Words and Concepts III	x		E,P,S	Laureate
Words&Concepts III: Spanish	x		E,P,S	Laureate
Words&Concepts III:Bilingual	x		E,P,S	Laureate
HandiKEY	x	x	P,S	MSI
HandiKEY Deluxe	x		P,S	MSI
Cintex	x		P,S	Nanopac
ezMorse for DOS	x		P,S	NSF
ezMorse for Windows		x	P,S	NSF
ezScan	x		P,S	NSF
WiViK2 with Scanning		x	S	Prentke
2+2	x	x	P	RJ
101 Animations		x	E,P,S	RJ
Build-a-Scene		x	E,P	RJ
Children's TW&Sw.Progr.		x	E,P	RJ
Early/Advanced Sw. Games		x	E,P,S	RJ
Find the Buttons		x	E,P	RJ
Five Little Ducks		x	E,P	RJ/kid.
Human Being Machine		x	E,P	RJ/kid.
Make It Go		x	E	RJ/kid.
My Action Book		x	E,P	RJ/kid.
Old MacDonald's Farm		x	E,P	RJ/kid.
PTP/Picture Scanner	X		E,P	RJ
RadSounds		x	E,P,S	RJ
Spell-a-Word	x	x	E,P	RJ
Teen Tunes		x	E,P	RJ/kid.
Teen Switch Progressions		x	P,S	RJ/kid.
The Rodeo		x	E,P	RJ/kid.
Turn-Talking		x	E,P	RJ
Freedom Writer	x		P,S	WC
Help U Key	x		P,S	WC
EZKeys for DOS	x		P,S	Words+
EZKeys for Windows		x	P,S	Words+

Software Title E=EC, P=Prim.,S=Sec./Adult	D	W	Level	Source D=DOS,W=Win
Public Domain: require a PC Pedal				
Cause& Effect Coll.:PC Pedal	x		E,P	COESS
Coop. Switch Games :PC Pedal	x		E,P,S	COESS
Motor Training Act.:PC Pedal	x		E,P,S	COESS
Clone Invaders :PC Pedal	x		P,S	COESS
Leaper :PC Pedal	x		P,S	COESS

Sources:	Key	Phone
Academic Software Inc.	ASI	606.233.2332
Boston Educ. Sys. & Tech.	BEST	617.277.0179
Co. Easter Seal Soc. (COESS)		303.233.1666
Computers to Help People,Inc.	CHPI	608.257.5917
Don Johnston, Inc.	DJ	800.999.4660
Consult. for Comm. Tech.	CCT	412.761.7336
Edmark		800.426.0856
Judy Lynn Software	JL	908.390.8845
Gus Communications	Gus	360.715.8580
Laureate		800.562.6801
Microsystems Software,Inc.	MSI	800.828.2600
Nanopac		918.665.0329
Neal Squire Foundation	NSF	604.473.9363
Prentke Romich	PR	800.262.1984
RJ Cooper/kidTech	RJ	800.RJCooper
Words+		800.869.8521
World Communications	WC	510.656.0911

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Switch Interface Update '96

Various Products	Cost	Apple II	Mac	PC	Source	Phone
I. Switch Interface Access (Dedicated)						
Apple Computer Input Adapter	41.00	x			TFSC	914.478.0960
Apple IIe Joystick Input Adapter	100.00	x			Life Science	516.472.2111
Apple Switch Interface	42.00	x			Don Johnston	800.999.4660
BEST Switch Interface	125.00			x	BEST	617.277.0179
Computer Switch Interface	36.00	x			Ablenet	800.322.0956
Gus! Mouse/Switch Interface	75.00			D/W	Gus Comm.	360.715.8580
HandiWARE Connectors	40-95.00			x	Microsystems	800.828.2600
IBM PC Joystick Input Adapter	100.00			x	Life Science	516.472.2111
IBM Switch Interface	99.95			x	Dunamis	800.828.2443
Macintosh Switch Interface	135.00		x		Don Johnston	800.999.4660
Modified PowerPad Switch Interface	300.00	x			Lekotek	404.633.3430
Mouse Emulator	189.00		x		Adaptivation	515.233.9086
MouseMover (Mac)	275.00	x	x		TASH	800.463.5685
MouseMover (PC Windows)	275.00			D/W	TASH	800.463.5685
Multiple Switch Box	68.00	x	x		Don Johnston	800.999.4660
PC Pedal	60-80			x	Trefoil	207.866.0362
PC Switch Interface	99.00			x	Ablenet	800.322.0956
PC Switch Interface	135.00			x	Don Johnston	800.999.4660
PowerSwitch	99.95			x	Dunamis	800.828.2443
SS Access!	60.00			x	Acad.SW	606.233.2332
SAM (collaborative switch access)	120.00	xIIgs	x	x	RJ Cooper	800.RJCooper
Switch PC Adapter (JLS)	23.00			x	Judy Lynn	908.390.8845
Universal Input Adapter	46.00	x			TFSC	914.478.0960
II. Multiple Access Devices (including switch input & not environmental controls)						
Adaptive Firmware Card	485.00	x			Don Johnston	800.999.4660
DaDa Entry	800.00			x	TASH	800.463.5685
DARCI TOO	995.00	x		x	WesTest	801.298.7100
Intellikeys	395.00	x	x	x	Intellitools	800.899.6687
Ke:nx	780.00		x		Don Johnston	800.999.4660
LINX Switch Interface	395.00			x	HACH	800.624.7968
Mac PI	250.00		x		Dunamis	800.828.2443
SuperPort (Powerpad &switches)	59.95	x			Dunamis	800.828.2443
III. Software Switch Access Solutions						
ClickIt!	99.95		x		Intellitools	800.899.6687
Crossscanner	249.00		x	WIN	RJ Cooper	800.RJCooper
IV. Switch Assessment Resources						
1. PCA Checklist					Don Johnston	800.999.4660
2. Lifespace Access Profile					Don Johnston	800.999.4660
3. Switch Assessment					Assistive Device Center	916.278.6422
4. Single Input Control					ESCI	416.421.8377

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SOFTWARE PUBLISHERS

Activision, Inc.
P.O. Box 7287
Mountainview, CA 94039

American School Publishers
11 W. 19th Street
New York, NY 10011
(212) 337-6033

Bantam Electronic Publishing
666 Fifth Avenue
New York, NY 10103
(800) 223-6834

Baudville
5380 52th Street, S.E.
Grand Rapids, MI 49508
(616) 698-0888

Jana Birch
3912 LaJolla Village Drive
LaJolla, CA 92037
(619) 452-9187

BOCES II Special Education
Microcomputer Resource Center
Sherwood Corporate Center
15 Andrea Drive
Holbrook, NY 11741

Wm. K. Bradford Publishing Company
310 School Street
Acton, MA 01720
(508) 263-6996

Broderbund Software, Inc.
17 Paul Drive
San Rafael, CA 94903-2101
(800) 521-6263

The Byte Works
4700 Irving Blvd., N.W., Suite 207
Albuquerque, NM 87114
(505) 898-8183

CBS Software
One Fawcett Place
Greenwich, CT 06836
(800) CBS-ASK4

Compu-Tech
78 Olive Street
New Haven, CT 06511
(800) 488-3224

R.J. Cooper and Associates
24843 Del Prado, Suite 283
Dana Point, CA 92629
(714) 240-1912

Davidson and Associates, Inc.
3135 Kashiwa Street
Torrance, CA 90505
(800) 556-6141

DIL International, Inc.
2025 Lavoisier Street, Suite 180
Sante-Foy, Quebec G1N 4L6
CANADA
(418) 687-9788
Telex: 051-3786
FAX: (418) 694-9679

DLM Teaching Resources
One DLM Park
Allen, TX 75002
(214) 248-6300
(800) 527-5030

Don Johnston Developmental
Equipment, Inc.
1000 N. Rand Road, Building 115
P.O. Box 639
Wauconda, IL 60084
(708) 526-2682
(800) 999-4660

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Dunamis, Inc.
3620 Highway 317
Suwanee, GA 30174
(800) 828-2443

Dynacomp, Inc.
178 Phillips Road
Webster, NY 14580
(716) 671-6167
(800) 828-6772

Edmark Corporation
P.O. Box 3903
Bellevue, WA 98009
(800) 426-0856

Exceptional Children's Software
P.O. Box 487
Hays, KS 67601
(913) 625-9281

The Great Wave Software
5353 Scotts Valley Drive
Scotts Valley, CA 95066
(408) 438-1990

Hartley Courseware, Inc.
P.O. Box 431
Dimondale, MI 48821
(800) 247-1380

Hi-Tech Expressions
584 Broadway
New York, NY 10012
(800) 447-6543

Laureate Learning Systems, Inc.
110 East Spring Street
Winooski, VT 05404
(802) 655-4755

Lawrence Productions, Inc.
1800 South 35th Street
Galesburhg, MI 49053-9687

The Learning Company
6493 Kaiser Drive
Fremont, CA 94555
(800) 852-2255

Learning Technologies, Inc.
13633 Gamma Road
Dallas, TX 75244
(214) 385-2351
(800) 238-4277

Marble Soft
21805 Zumbrota, N.E.
Cedar, MN 55011
(612) 434-3704

Millenium
24 East 22nd Street
New York, NY 10020
(212) 674-0040

Mindplay
3130 N. Dodge Boulevard
Tucson, AZ 85716
(800) 221-7911

Mindscape
Ed. Div. Dept. C
1345 Diversey Parkway
Chicago, IL 60062
(312) 525-1500

Peal Software
P.O. Box 8188
Calabasa, CA 91372
(818) 833-7849

Pelican Software, Inc.
768 Farmington Court
Farmington, CT 06032
(800) 822-DISK

Polarware
1055 Paramount Pkwy., Suite A
Batavia, IL 60510
(312) 232-1984

Project ACTT
27 Horrabin Hall
Western Illinios University
Macomb, IL 61455
(309) 298-1634

Saddleback Graphics
3621 W. MacArthur Boulevard
Suite 119
Santa Ana, CA 92704
(714) 540-4062

Scarborough Systems, Inc.
55 S. Broadway
Tarrytown, NY 10591
(914) 332-4545

Scholastic, Inc.
(212) 505-3561

Simon and Schuster, Inc.
Computer Software Division
1230 Avenue of the Americas
New York, NY 10020
(212) 860-0300
(800) 847-7078

Spinnaker Software
201 Broadway
Cambridge, MA 02139
(617) 494-1200

Springboard Software, Inc.
7807 Creekridge Circle
Minneapolis, MN 55435
(612) 944-3912

Stone and Associates
7910 Ivanhoe Avenue, Suite 319
LaJolla, CA 92037
(800) 748-5523

Sunburst Communications, Inc.
39 Washington Avenue
Pleasantville, NY 10570
(914) 769-5030
(800) 628-628-8891

Tom Snyder Productions
90 Sherman Street
Cambridge, MA 02140
(617)874-4433

UCLA/LAUSD Microcomputer Project
1000 Veteran Avenue
Room 23-10
Los Angeles, CA 90024
(213) 825-4821

Weekly Reader Software/
Optimum Resource, Inc.
10 Station Place
Norfolk, CT 06058
(800) 327-1473

Public Domain Special Education Software Caatalogs:

Center for Adapted Technology
Colorado East Seals
5755 W. Alameda
Lakewood, CO 80226
(303) 233-1666

Connecticut Rehabilitative Engineering
Center
The Institute for Human Resource
Development
78 Eastern Boulevard
Glastonbury, CT 06033
(203) 659-1166
(203) 657-9954

Technology for Language & Learning
Special Education Public Domain Project
P.O Box 327
East Rockaway, NY 11518-0327
(516) 625-4550

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AUGMENTATIVE COMMUNICATION

The Project ASTECH software explores augmentative communication devices, discusses assessment, and introduces installation, programming and troubleshooting strategies. We have compiled a list of each augmentative communication device introduced in this software. This list provides contact information for the companies that distribute these devices. In the Project ASTECH software program, you learned about several representative examples of dedicated and computer-based devices. Because there are numerous devices and augmentative software programs available, we have included a matrix to help you sort through these devices.

You will find the Checklist for Overlay Design in your Resource Guide which may be useful in guiding you as you develop the vocabulary that will be programmed into the student's device. Programming, troubleshooting, and implementation checklists also are provided for your future use.

This section also includes the official position statement and report on the role of the speech-language pathologist in alternative and augmentative communication approved by the American Speech-Language-Hearing Association. You may refer to the selected augmentative communication readings and resources for additional information.

Contents

List of Devices in ASTECH Software 1AC
Sorting Through Augmentative Communication 2AC - 9AC
Checklist for Overlay Design 10AC - 12AC
Programming Checklist 13AC
Troubleshooting Checklist 14AC
Implementation Checklist 15AC - 17AC
ASHA Position Statement and Report 18AC - 22AC
Selected Readings & Publications 23AC - 26AC

LIST OF DEVICES - AUGMENTATIVE COMMUNICATION

We have mentioned devices as representative examples within our software program. Here is a list of those devices and the companies from which they may be purchased. These companies also sell other products in which you may be interested. The companies' addresses and phone numbers are listed in the Resource List of the General Information section of this Resource Guide.

Device	**Company**
AlphaTalker™	Prentke Romich Co.
Dial Scan	Don Johnston, Inc.
DigiVox®	Sentient Systems Technology, Inc.
DynaVox®	Sentient Systems Technology, Inc.
**EvalPac	ACS Technologies
Liberator™	Prentke Romich Co.
Macaw™	Zygo Industries, Inc.
Parrot™	Zygo Industries, Inc.
SpeakEasy™	AbleNet, Inc.
*Speaking Dynamically™	Mayer-Johnson Co.
System 2000/Versa™	Words +, Inc.
*Talking Screen	Words +, Inc.
Versascan ™	Prentke Romich Co.
VOIS 160	Phonic Ear Inc.
Wolf	ADAMLAB
Zygo 16	Zygo Industries, Inc.

* denotes software
** no longer produced

The University of Kansas Medical Center

School of Allied Health
Department of Occupational Therapy Education
3033 Robinson

Information about Sorting Through Augmentative Communication

These handouts were developed to help therapists and educators "sort through" the available augmentative communication devices. It is not simply a product information sheet but rather is set up to narrow down options. It is not an expert system, but it does eliminate some devices based upon the individual's needs. The sorting matrix is used after the evaluation when you know the individuals' needs and are ready to look at device options. By the time you look at the matrix, it has already been determined that the individual needs a "high tech" solution--but remember, not everyone needs a voice-output device.

Begin your sorting with the type of access method the individual will use. Circle those devices (see, you've already elimiated some). Continue the sorting by circling those devices which continue to be options. In each column you will be eliminating more devices. When you are finished, you will have a list of devices that may be appropriate and you can get more information about them.

The sorting matrix is for dedicated voice-output devices only. You have a separate handout for computer-based augmentative communication solutions. Although it is not set up for you to "sort through", we have listed which input methods and devices can be used with the software, as well as with which type of computer and operating system the software works. You also have a list of speech synthesizers.

Our goal is for this information to be useful to you. Our sorting matrix includes categories that we consistently consider in our evaluation. Obviously, there are others (such as computer access, rental programs, vendor support, etc) which we consider. Due to limited space we could not include everything. If you have a category that you address all the time, then you should add it so that the matrix is useful for you.

If you have questions or comments, please contact us.

Cheryl M. Deterding, MA, OTR
Beth D. Moffitt, MA, CCC-SLP
Stephanie A. Dustman, MS, OTR

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SORTING THROUGH AUGMENTATIVE COMMUNICATION

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Device	Access		Flexibility				Voice	Portability		Cost	Company
	Direct	Non-direct	Vocab size	Symbol Use	Print output	Visual output	Syn/ Dig	Wt (approx)	Size (approx)		
AIPS Wolf	x	x	800 words per section 4 sections	All			S	4 lb	9x14		ADAMLAB
AlphaTaker	x	x	3-25 min	All			D	<3 lb	13x9x3	$1495-$2390	PRC
AudioScan		x	64K				S			$4000	Detroit Inst.
Big Mack	x		1 msg 20 sec	All			D	<1 lb	6x6	$74	Ablenet
Canon Communicator	x	x	7000 char. or 240 sec	Letter, #	x	x	D	19 oz	7x4x1	$1100	Crestwood
Companion 401 Communicator	x		4 msg/20 sec total	All			D	12 oz	5x4x2	$125	Luminaud
DAC	x		18-72 min	All	x	x	D	8-12 lb	12x16	$3295-3995	ecs
Digivox	x	x	4-35 min	All		x	D	<4 lb	12x9x2	$2150-2995	Sentient
Dynavox	x	x	virtually unlimited	All	opt	x	S, D	<11 lb	13x11x3	$3995-4700	Sentient
Fifteen Talker	x		15 msg 8 sec ea	All			D	14 oz	5x7x2	$429	Attainment
Five Talker	x		5 msg/32 sec total	All		x	D	8-10 oz	5x3x1	$229	Attainment
Five Talker Plus	x		5 msg/32 sec total	All			D	8-10 oz	5x3x1	$329	Attainment
Hallmark Card	x		1 msg 10sec	All			C	6 oz		$8	Hallmark
Handy Speech Communication Aid	x	x	unlimited	letter,#	opt	x	S	3 lb	8x11	$2500	CCT
Hawk	x		9 msg 5 sec each	All			D	4lb	9x14	$175	ADAMLAB
Language Master 6000 (special edition)	x		unlimited	letter			S	12 oz	6x6x1	$490	Tiger
Language Master 6000 (reg edition)	x		110,000 words	letter			S	12 oz	6x6x1	$225	Tiger
Liberator	x	x	unlimited	All	x	x	S	<8 lb	14x10x3	$7345	PRC
LightTalker	(x)	x	unlimited	All	opt	x	S	<7 lb	13x9x4	$5895	PRC
Lightwriter SL8		x	9000 char	Letter,#	opt	x	S (ext)	<2 lb	8x5x2	$3190	Zygo
Lightwriter SL30	x		5K	Letter,#	opt	x	S (ext)	<2 lb	8x5x2	$3140	Zygo
Lightwriter SL 35	x		32K	Letter/#	opt	x	S	<2lb	8x5x2	$3430	Zygo
Lightwriter SL80		x	9000 char	Letter,#	opt	x	S (ext)	<2lb	8x5x2	$3190	Zygo
Lingraphica	(x)		20,000 words	picture, words	opt		D	7 lb	11x9x1	$6450	Tolfa
Loquitor 250	x		4 msg 33sec total	All			D	2.5 lb	9x6x2	$725	WPS
Lynx	x	x	4 msg 4 sec each	All			D	2 lb	3x5x5	$250	ADAMLAB
Macaw	x		32 msg 1-8min	All			D	2.7lb	12x8x1	$1150	Zygo
Macaw II SC	x	x	32 msg 1-8min	All			D	2.7 lb	12x8x1	$1795	Zygo
MessageMate 20	x	x	20-80 sec	All			D	<2 lb	12x3	$499-699	Words+
MessageMate 40	x	x	20-160 sec	All			D	<2 lb	12x4	$749-949	Words+
Messenger	(x)		1 msg 20 sec	All			D	6 oz	5x4x2	$90	Crestwood
Mini Talking Card Reader	x		approx 960 sec	All			D			$70	Crestwood

3AC

Device	[illegible]		Flexibility				Voice	Portability			
	Direct	Non-direct	Vocab size	Symbol Use	Print output	Visual output	Syn/ Dig	Wt (approx)	Size (approx)	Cost	Company
Parrot	x		16 msg 32 sec total	All			D	13 oz	5x4x2	$750	Zygo
Parrot JK	x	x	16 msg/32 sec total	All			D	13 oz	5x4x2	$850	Zygo
Peacekeeper (includes Speaking Ace 200)	x		90,000 words	picture letter			S	15oz	9x8x2	150	Tiger
Peacemaker (includes Language Master 8000 reg edition)	x		110,000 words	picture letter			S	15 oz	9x8x2"	285	Tiger
Polycom/Polytalk	x		28,000 words	Letter,#	opt	x	S	2 lb	10x9x3	$5995	Zygo
Realvoice Evalpac	x	x	27,000 characters virtually unlimited	All	x	x	S	5 lb	8x14x2	$4395	acs
Realvoice Scanpac	x	x	27,000 characters virtually unlimited	All	x	x	S	5 lb	8x14x2	$3995	acs
Say-It-All	x		845 phrases	All			S	2 lb	15x7x1	$1995	Innocomp
Say-It-Simply Plus	x		762 phrases	All			S	<5 lb	19x17x1	$1995	Innocomp
Scan-It-All	(x)	x	>700 phrases	All		x	S	<5lb	19x9x2	$3495	Innocomp
ScanMate 4	x	x	4 msg 4 sec ea	All			D	8 oz	3x5	$385	TASH Innocomp
ScanMate 8	x	x	8 msg 4 sec ea	All			D	16 oz	6x10	$695	TASH Innocomp
Secretary	x		20 msg 32-64 sec total	Letter, #	x	x	D	2 lb	10x6x2	$2295	Zygo
Speak A Tag	x		1 msg 20 sec	All			D	2 oz	2x1	$29	Luminaud
SpeakEasy	(x)		12msg 2 min total	All			D	<3lb	8x6x3	$365	Ablenet
Speaking Ace 200	x		90,000 words	letter,#			S	10 oz	6x6x1	$75	Tiger
Special Friend Speech Prosth	x	x	26x26 memory location	letter,#		x	S			$2407 (direct) $3267(scan)	Shea
Specialist (includes Language Master 8000 special edition)	x		unlimited	picture letter			S	15oz	9x8x2	$85	Tiger
Switchmate 4	(x)		4 msg 4 sec ea	All			D	8 oz	3x5	$360	TASH Innocomp
System 2000	depends on software		virtually unlimited	depends on software			S, D	10.7 lb	12x10x2	$7737	Words +
Talk Back III	(x)		3 msg 20 sec total	All			D	1.5 lb	12x6x10	$274	Crestwood
TouchTalker	x		unlimited Mult softw pks avail	All	opt	x	S	16 lb	13x8x3	$5170	PRC
Two Talker	x		2 msg 8 sec ea	All			D	6 oz	4x3x1	$149	Attainment
Vocal assistant	x		16 msg	All			D	11 oz	4x6x1	$395	Luminaud
Voice Pal Plus	x	x	10 msg 6 sec ea	All			D	1.5 lb	4x7x2	$429-	AdapTech
Voice Pal	(x)		5 - 4 sec ea	All			D	1.5 lb	4x7x2	$369	AdapTech
Voicemate 4	x		4 msg 4 sec ea	All			D	8 oz	3x5	$325	TASH
Vois 160	x		1400 preprog/ 64,000 user prg	All	opt	x	S	4 lb	9x16x4	$4352	Phonic Ear
Walker Talker	x		1-8 min	All			D	<2 lb	13x3x1	$1195	PRC
Whisper Wolf	x	x	800 words per section 4 sections	All			S	4#	9"x14"	450	ADAMLAB
Wolf	x		800 words per section 4 sections	All			S	4#	9x14	400	ADAMLAB

AUGMENTATIVE COMMUNICATION SOFTWARE

In addition to dedicated augmentative communication devices, computer software and voice synthesizers are available that will provide voice-output for individuals with speech impairments. When augmentative communication software is used with a portable computer, an individual has an augmentative communcation system that is portable as well as a computer that can be used for other tasks, if needed. The software is generally priced separately from the computer and the speech synthesizers. The documentation for the software will state which speech synthesizers can be used. Some manufacturers/vendors have demo disks available at no charge or for a minimal charge. The input code is: K=Keyboard, M=Mouse, J=Joystick, MC=Morse Code, S=Scanning, T=Touch Screen

IBM/COMPATIBLE COMPUTERS (PC)

Software	Input	DOS/Windows	Cost	Available from:
AudScan II	S	DOS	$1395	Words+, Inc.
Aurora	K,S	DOS	$1195	acs
Equalizer	K,M,S	DOS	$1395	Words+, Inc.
EZ Keys/EZ Talker	K	DOS (Win'95)	$1395	Words+, Inc.
HandiCHAT/ Deluxe	K,M	DOS	$149 $295	Microsystems Software, Inc.
HandiKEY/ Deluxe	K,M,S	DOS,Win DOS	$395 $495	Microsystems Software, Inc.
HandiCODE/ Deluxe	K,MC	DOS, Win DOS, Win	$395 $495	Microsystems Software, Inc.
Help U Type and Speak/ intelligent	K	DOS DOS	$595 $695	World Communications
Help U Keyboard and Speak/intelligent	M	DOS	$495 $695	World Communications
Help U Key and Speak/ intelligent	K,M,S	DOS	$495 $695	World Communications

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I Can Speak/ Multimedia speech	K,M,S,T,J	Win	$495 $695	World Communications
Morse Code WSKE II	MC	DOS (Win'95)	$1395	Words+, Inc.
OneKey	K	DOS	$295	Pointer Systems
PopComm	K	DOS	$395	Pointer Systems
PC-Voice	K,M,J	DOS	$495	Compeer Corp.
Scanning WSKE II	S,J,M	DOS (Win'95)	$1395	Words+, Inc.
Speed Scan	S	DOS	$695	Pointer Systems
Talking Screen	M,S,T	DOS (Win'95)	$1395	Words+, Inc.

MACINTOSH COMPUTERS

Software	Input	Cost	Available from:
Speaking Dynamically	K,M,K,S	$299	Mayer-Johnson
Talk About	K,M,J,S	$490	Don Johnston,Inc.

Additional information:

There are also alternate computer access devices that can be used for augmentative communication. These are not listed above because they require both hardware and software, and because they could also be used as just an alternate computer access device without augmentative communication.

Some of these options are:

Ke:nx	$780	Don Johnston,Inc.
Ke:nx on Board	$675	Don Johnston,Inc.
Intellikeys (IntelliTalk and Overlay Maker)	$395 $100	IntelliTools or Don Johnston,Inc.

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SPEECH SYNTHESIZERS

Speech Synthesizers may plug in, may be software-based, or may need to have a card installed. You will need to check with the company for specific information.

SPEECH SYNTHESIZERS	COST	COMPUTER	AVAILABLE FROM
Audapter Speech System	$895	PC/MAC	Personal Data Systems, Inc.
CompuSight Juno Speech System	$995	PC	E.V.A.S
Computalker Speech Synthesizer	$50	PC/MAC	B.G. Micro
Double Talk LT	$310	PC	RC Systems
Double Talk PC	$289	PC	RC Systems
Echo PC	$130	PC	Echo Speech Corporation
Handy Speech K	$700	PC	CCT
Macintalk	Varies	MAC	Apple Computer
Macintalk II	Varies	MAC	Apple Computer
Macintalk II Pro	Varies	MAC	Apple Computer
Mini-VOXBOX	$299-350	PC	Zygo, Inc
Multivoice	$1200	PC/MAC	Institute on Applied Technology
Personal Speech System	$449	PC/MAC	Vysion, Inc
Speak-Out	$650	PC/MAC	G.W.Micro, Inc
Sounding Board	$395	PC	G.W.Micro, Inc
VocaLite Voice Synthesizer	$399	PC	Words+, Inc

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AbleNet, Inc.
1081 10th Ave. SE
Minneapolis, MN 55414
800-322-0956

acs Technologies
1400 Lee Dr.
Coraopolis, PA 15108
800-227-2922

ADAMLAB
33500 Van Born Rd.
Wayne, MI 48184
313-467-1415

AdapTech, Inc.
2501 N Loop Dr.
Ames, IA 50010
800-723-2783

Attainment
PO Box 930160
Verona, WI 53593-0160
800-327-4269

B. G. Micro
PO Box 280298
Dallas, TX 75228
214-271-5546

Compeer Inc.
1409 Graywood Drive
San Jose, CA 95129
408-255-3950

Consultants for Communication Technology (CCT)
508 Bellevue Ter.
Pittsburgh, PA 15202
412-761-7336

Crestwood Co.
6625 N Sidney Place
Milwaukee, WI 53209
414-352-5678

Detroit Institute for Children
5447 Woodward Ave.
Detroit, MI 48202
313-832-1100

Don Johnston Incorporated
1000 N Rand Rd., Bldg. 115, PO Box 639
Wauconda, IL 60084
800-999-4660

E.V.A.S.
PO Box 371
Westerly, RI 02891
800-872-3827

Echo Speech Corporation
6460 Via Real
Carpinteria, CA 93013
805-684-4593

GW Micro, Inc.
310 Racquet Dr.
Fort Wayne, IN 46825
219-483-3625

Innocomp
26210 Emery Rd., Ste. 302
Warrensville Heights, OH 44128
800-382-8622

Inst. on Applied Tech., Children's Hospital
Fegan Plaza, 300 Longwood Ave.
Boston, MA 02115
617-735-7870

IntelliTools
5221 Central Ave., Ste. 205
Richmond, CA 94804
800-899-6687

Luminaud, Inc.
8688 Tyler Blvd.
Mentor, OH 44060
216-255-9082

Mayer-Johnson Co.
PO Box 1579
Solana Beach, CA 92075-1579
619-481-2489

Microsystems Software Inc.
600 Worchester Rd., Ste. B2
Framington, MA 01701
508-626-8511

Personal Data Systems, Inc.
PO Box 1008
Campbell, CA 95009
408-866-1126

Phonic Ear Inc.
3880 Cypress Dr.
Petaluma, CA 94954
800-227-0735

RC Systems, Inc.
1609 England Ave
Evertt, WA 98203
206-355-3800

Pointer Systems, Inc.
One Mill St.
Burlington, VT 05401
802-872-8378

Prentke Romich Co.(PRC)
1022 Heyl Rd.
Wooster, OH 44691
800-262-1984

RC Systems, Inc.
1609 England Ave
Evertt, WA 98203
206-355-3800

Sentient Systems Technology, Inc.
2100 Wharton St., Ste. 630
Pittsburgh, PA 15203
800-344-1778

Shea Products, Inc.
1721 Hamlin Rd.
Rochester Hills, MI 48309
810-852-4940

TASH Inc.
Unit 1, 91 Station St.
Ajax, ON L1S 3H2 Canada
905-686-6895

Tiger Communication System, Inc.
155 E Broad St., #325
Rochester, NY 14604
800-724-7301

Tolfa Corporation
1001 Rengstorss
Mountain View, CA 94043
800-332-4913

Words+, Inc.
40015 Sierra Hwy., B-145
Palmdale, CA 93550
800-869-8521

Western Psychological Services (WPS)
12031 Wilshire Blvd
Los Angeles, CA 90025-1251
310-478-2061

World Communications
245 Tonopah Dr.
Fremont, CA 94539
510-656-0911

Zygo Industries, Inc.
PO Box 1008
Portland, OR 97207
800-234-6006

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Checklist for Overlay DEsign - CODE

Mark needed vocabulary in red.

Initiation

1. Greetings
__ Hello
__ Hi __ Hi, how are you?
__ How are you doing? __ How are you? __ Hi, what's happening?
__ It's good to see you
__ Other

2. Way to get someone's attention
__ Excuse me
__ Would you come here?
__ I have a question
__ I need help
__ Other

3. Introduce self; provide personal information.
__ My name is ________
__ Age __ Where live
__ I go to school at __ I'm from
__ Other

4. Ask questions to gain information or initiate topics
__ Is it time to ________ __ What time is it?
__ Where is ________ __Why?
__ What's for lunch? __ What are we going to eat?
__ How are you feeling? __ Do you want to play a game?
__ What did you do ________ (yesterday, last night, last weekend)
__ What are you going to do (tonight, tomorrow, this weekend)
__ What do you like to do?
__ What do you like to watch on TV?
__ Other

5. Other
__ (give compliments) You look nice __ I like what you're wearing
__ (insults)
__ Names
__ Other

Facilitation

1. Indicate physical state/feelings.
__ I'm fine __ I'm tired __ I'm hurt __ I'm mad/angry
__ I love __ I miss __ I'm homesick __ I'm sick __ I'm hot
__ I'm cold __ I'm hungry __ I'm thirsty __ I like it
__ I don't like it __I don't feel well
__ I'm uncomfortable in my wheelchair __ I've had enough
__ I am having a good day __I am having a lousy day
__ Other

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2. Seek help when needed.
   __ I need help __ Please come here __ Please change my overlay
   __ I want something added to (taken off) my overlay
   __ I want to __ go outside __go swimming __go for a walk
      __eat __drink __go to the bathroom __play a game __talk to
      __sit in the hall __watch tv __listen to music __go home
      __play on the computer __go to the library __play cards
      __write a letter __go shopping __sit by the girls/boys
      __go to my classroom __go to PT __go to OT __go to speech
      __take a nap __see the nurse __listen to talking books
      __go on a field trip __go to Blake Hall
      __I want to get out of my wheelchair
   __ Other
      __
      __
      __

3. Polite social forms
   __ Please __ Excuse me __ I'm sorry __ That's too bad
   __ Thank you
   __ Other

4. Provide time frame
   __ Yesterday __ today __ morning __ afternoon __ tonight
   __ last night __ last weekend __ tomorrow __ this weekend
   __ vacation __ I went __ I will go __ I did __ I will
   __day __night __did
   __Other

5. Add detail to clarify.
   __ time markers (above)
   __ identifying phrases:
      __Someone from home
      __Someone in my class
      __Someone in my unit
      __My teacher
      __My friend
      __My family
      __Other
   __Other

Regulation

1. Express lack of understanding.
   __ I don't know __ I don't understand __ Please repeat
   __ What do you mean?
   __ Other

2. Change topic appropriately.
   __ I have a question to ask __ There is something I want to know
   __ I have something to tell you.
   __ Other

3. Interrupt politely.
   __ Excuse me __ May I please interrupt
   __ I need to say something
   __ Other

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4. Request more time.
__ Please wait. I need more time to finish.
__ Other

5. Indicate a mistake was made.
__ Oops! I didn't mean to say that __ That was a mistake
__ I made a mistake
__ Other

6. Maintain interest and monitor understanding.
__ Oh really? __ What happened next? __ How did you feel?
__ Other

Closure

1. Terminate conversation
__ Bye-bye __ Goodbye __ So long __ See you later
__ It was nice talking to you __ See you soon __ Later Gator
__ Other

Other Vocabulary

1. Special Purpose (sports, clubs)

2. Names

3. Other
__prayer __pledge of allegiance __birthday greeting/song
__favorite:
    __food
    __activity
    __color
    __subject
__important recent events

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AUG COM GENERAL PROGRAMMING STEPS*

Programming is the completion of specific steps with equipment to enable students to do something they couldn't do before. In the area of augmentative communication the desired result is a spoken message.

SIX GENERAL STEPS

1. Turn on the device
2. Tell the machine that you want to program a message
3. Choose a storage area/key
4. Enter the message
5. Store the message
6. Retrieve the message

Some devices will simply follow the general steps. Other devices may have several substeps within a step.

* Taken from Project ASTECH software

AUG COM GENERAL TROUBLESHOOTING STRATEGIES*

Troubleshooting strategies are used to locate and correct a problem. When using an augmentative communication devices, a common problem is that the device has NO SPEECH OUTPUT--which means you do not hear the device speak a message when you press a key.

GENERAL TROUBLESHOOTING CHECKLIST

Device ________________
Company Name ________________
Company Phone #________________
Date ________________
Problem No Speech Output

Is the device on?

Is there a volume control?
    Is the volume loud enough?

Is the battery charged?

Does the device have a method to turn the speech on/off?
    Is speech on?

Is there a message programmed?

After using these general troubleshooting strategies, if the device still does not have speech output do the following:

- Check the device manual for more detailed, specific troubleshooting strategies.
- Call the company. Make sure you have the device in front of you when you call.

* Taken from Project ASTECH software

CHECKLIST FOR SUCCESSFUL IMPLEMENTATION OF AN AUGMENTATIVE COMMUNICATION DEVICE

	Yes	No	Comments
1. **Selection** of the device involved all appropriate persons: a. The student was involved in the selection of the device b. The parent(s)/guardian(s) were involved in the selection of the device c. Appropriate team members were involved in the selection of the device			
2. An appropriate **switch site/movement** has been selected using the student's most consistent and efficient motor movement			
3. An appropriate **switch** has been selected			
4. The device is **connected** appropriately a. The switch is connected appropriately			
5. The equipment is **positioned** appropriately so the student can easily access it a. The switch is positioned appropriately b. The device is positioned appropriately c. Positioning of the equipment does not take a significant amount of time			
6. An appropriate staff member is appointed **primary facilitator** of the student's aug com device a. Primary facilitator is given extra planning time for : 1) ongoing vocabulary review 2) ongoing staff and family consultation			
7. Appropriate **training** has been completed: a. All staff working with a student have been appropriately trained b. The student has been appropriately trained 1) The student has been trained in naturalistic communication settings c. The parent(s)/guardian(s) have been appropriately trained d. The siblings have been appropriately trained e. Classmates have been appropriately trained f. Peers have been appropriately trained g. A sufficient amount of time is allowed for all the above for training			

8. Support is given to staff members			
9. The device is always **available**			
10. The device is always **turned on**			
11. The battery is **charged systematically**			
12. **Expectation** for the student's use of the aug com device are consistent across environments			
13. **Daily activity (lessons) plans** are written to include the student's use of the aug com system a. Student uses and is expected to use the device during all subjects, story time, snack/lunch, etc.			
14. Appropriate **IEP goals** are written to improve the student's communication with the aug com device			
15. The **vocabulary** is appropriate a. The appropriate symbols were selected 1) The appropriate type of symbols was selected 2) The appropriate size of symbols was selected b. Motivating vocabulary was selected 1) Jokes, riddles were included 2) Peer slang (e.g., "Cowabunga dude!) was included 3) Holiday vocabulary was included 4) Recent events (both personal and public) were included 5) Songs were included c. The vocabulary is age-appropriate d. The student has the ability to initiate topics with the vocabulary e. The student has the ability to ask questions with the vocabulary f. Vocabulary is available for each activity during the day g. If overlays are used, the correct overlay is on for the correct activity h. The student is able to respond to classroom questions using the device i. Appropriate persons (e.g., student, parents, primary facilitator, teacher, other staff members, peers) were included in the collection/development of the vocabulary j. Vocabulary is reviewed/updated in a systematic manner			

16. The **"voice"** on the device is appropriate for the student a. The voice matches the gender of the student b. The voice matches the age of the student			
17. The student is **allowed enough time to respond**			
18. **Response to the student's communication attempts** are similar to responses given to verbal students			
19. The student is allowed to **respond independently.** The student's communication attempts are not anticipated			
20. The student is able to **transport** the device easily a. The student is able to use the device in and out of a wheelchair b. The student is able to use the device inside and outside			
21. The aug com system is **insured** so that everyone feels comfortable with taking it everywhere			

Augmentative and Alternative Communication

Committee on Augmentative Communication
American Speech-Language-Hearing Association

The following document, developed by the American Speech-Language-Hearing Association (ASHA) Committee on Augmentative Communication, was adopted as an official statement by the ASHA Legislative Council (LC 11–90) in November 1990. (See Report: Augmentative and Alternative Communication, Asha, 33 *(Suppl. 5) 7–10. Members of the committee included Carolyn Watkins (chair), Diane Bristow, Joan Bruno, Vince Byers, Avis Dawkins, Michelle Ferketic (ex officio), Rita Glass, Mark Mizuko, Barry Romich, and Tina Williams, with the guidance of Teris K. Schery (1988–1990 vice president for clinical affairs).*

Position Statement

It is the position of the American Speech-Language-Hearing Association that communication is the essence of human life and that all people have the right to communicate to the fullest extent possible. Furthermore, provision of augmentative and alternative communication (AAC) services is within the scope of practice of speech-language pathologists and audiologists (ASHA, 1990).

AAC refers to an area of clinical, research, and educational practice for speech-language pathologists and audiologists that attempts to compensate and facilitate, temporarily or permanently, for the impairment and disability patterns of individuals with severe expressive, and/or language comprehension disorders. AAC may be required for individuals demonstrating impairments in gestural, spoken, and/or written modes of communication.

Roles and Responsibilities

The speech-language pathologist and audiologist practicing within the area of AAC shall:

1. Recognize and hold paramount the needs and interests of individuals who may benefit from AAC;
2. Acquire and maintain the knowledge and skills to provide quality professional services;
3. Utilize a service delivery approach that incorporates the goals, objectives, skills, and knowledge of various disciplines, as well as that of the individual and family members;
4. Implement a multimodal approach to facilitate effective communication;
5. Facilitate the individual's integration of AAC use in daily life;
6. Acquire and maintain knowledge about funding issues as they relate to AAC systems and services, education and research; and
7. Recognize the need for and promote basic and applied research in AAC.

Reference

American Speech-Language-Hearing Association. (1990). Scope of practice, speech-language pathology and audiology. *Asha*, 32 (Suppl. 2), 1–2.

Reference this material as follows:

American Speech-Language-Hearing Association. (1991). Augmentative and alternative communication. *Asha*, 33 (Suppl. 5), 8.

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Report: Augmentative and Alternative Communication

Committee on Augmentative Communication
American Speech-Language-Hearing Association

The following report was developed by the American Speech-Language-Hearing Association (ASHA) Committee on Augmentative Communication. Members of the committee included Carolyn Watkins (chair), Diane Bristow, Joan Bruno, Vince Byers, Avis Dawkins, Michelle Ferketic (ex officio), Rita Glass, Mark Mizuko, Barry Romich, and Tina Williams, with the guidance of Teris K. Schery (1988–1990 vice president for clinical affairs).

Introduction

Communication is the essence of human life. Approximately 2 million Americans are unable to speak or demonstrate severe communication impairments (ASHA, 1987).

Individuals requiring augmentative or alternative communication (AAC) may demonstrate impairments in gestural, spoken, and/or written modes of communication. There is a wide range of disabilities that may leave an individual without adequate ability to communicate through gestures, speech, and/or writing. These include congenital and acquired conditions, progressive neurological diseases and temporary conditions (Vanderheiden & Yoder, 1986).

The First Amendment of the Constitution of the United States guarantees the right of freedom of speech. For persons with severe communication impairments this is more than a constitutional issue. It is the belief of the American Speech-Language-Hearing Association (ASHA) that, in order to realize their constitutional right, persons with severe communication impairments should have access to an AAC system and services.

Public awareness of the needs and capabilities of individuals with disabilities has grown rapidly in recent years. The provision of services to individuals with disabilities, including those with AAC needs, is directed and encouraged by specific federal (U.S. Department of Education, 1988), state, and private initiatives. These initiatives range from guaranteeing civil rights (e.g., Public Law 101–366, the Americans with Disabilities Act) to providing funds for education, research, products, and services. These developments have contributed to the rapid growth of services and technology development in the area of AAC. ASHA has joined many other professional and advocacy organizations in providing leadership in the development of this field.

AAC is an area of clinical and educational practice that attempts to compensate temporarily or permanently, for the impairment and disability patterns of individuals with severe communication disorders (ASHA, 1989). For nearly a decade the document, "Position Statement on Nonspeech Communication" (ASHA, 1981) has guided the members of the Association in addressing the needs of individuals using AAC. Recently, "Competencies for Speech-Language Pathologists Providing Services in Augmentative Communication" (ASHA, 1989)[1] defining the skills necessary to provide services to individuals using AAC was published. The area of AAC has continued to grow and develop at a rapid rate. The knowledge base has expanded, creating new materials, skills, and resources. As a result of this progress, and in keeping with the ASHA Executive Board policy of periodic review of products and position statements (EB 123–87), "Position Statement on Nonspeech Communication" (ASHA, 1981) has been updated to reflect current philosophy, knowledge, and practices.

This revised document reflects changes in terminology, the roles of the speech-language pathologist and audiologist, and the service delivery model. The need for an individual to demonstrate specific cognitive prerequisites prior to initiating intervention has not been sufficiently documented (Kangas & Lloyd, 1988). It is recognized, however, that not all individuals will be able to utilize a high tech system following an initial intervention program. Selection of a multimodal system (e.g., one that may include natural gestures, a manual board and electronic communication device) is advocated. Competencies are defined and the roles of speech-language pathologists and audiologists are broadened.

Terminology

Individuals with severe communication disorders are

---

[1] Hereafter referred to as "Competencies."

Reference this material as follows:

American Speech-Language-Hearing Association. (1991). Report: Augmentative and alternative communication. Asha, 33 (Suppl. 5), 9–12.

those who may benefit from AAC—those for whom gestural, speech, and/or written communication is temporarily or permanently inadequate to meet all of their communication needs. For those individuals, hearing impairment is not the primary cause for the communication impairment. Although some individuals may be able to produce a limited amount of speech, it is inadequate to meet their varied communication needs. Numerous terms that were initially used in the field, but are now rarely mentioned, include speechless, nonoral, nonvocal, nonverbal, and aphonic.

An **AAC system** is defined as an integrated group of components, including the symbols, aids, strategies, and techniques used by individuals to enhance communication. The system serves to supplement any gestural, spoken, and/or written communication abilities. The following key terms used throughout the document are defined below:

- **Symbol** - a visual, auditory and/or tactile representation of conventional concepts (e.g., gestures, photographs, manual sign sets/systems, picto-ideographs, printed words, objects, spoken words, Braille).
- **Aid** - a physical object or device used to transmit or receive messages (e.g., a communication book, board, chart, mechanical or electronic device, or computer).
- **Strategy** - a specific way of using AAC aids, symbols, and/or techniques more effectively for enhanced communication. A strategy, whether taught to an individual or self-discovered, is a plan that can facilitate one's performance.
- **Technique** - a method of transmitting messages (e.g., linear scanning, row-column scanning, encoding, signing and natural gesturing).
- **Multimodal System** - an approach which utilizes the individual's full communication capabilities, including any residual speech or vocalizations, gestures, signs, and aided communication.
- **Interdisciplinary** - an approach which incorporates the goals, objectives, skills, and knowledge of various disciplines, as well as that of the individual and the family members. This approach may be implemented by either a single team member serving the primary role in consultation with other team members (often defined as transdisciplinary), or by several team members, each implementing the goals and objectives of the other disciplines as indicated.

The Role of the Speech-Language Pathologist and Audiologist

AAC services should be provided by a team that follows an interdisciplinary service delivery model. The team membership, may include but is not limited to the following: speech-language pathologist, audiologist, the individual using AAC, caregivers, educator, extended family and friends, occupational therapist, optometrist, physical therapist, physician(s), psychologist, manufacturers' representative(s), rehabilitation engineer, representative of funding agency(ies), seating and fitting specialist, social worker, third-party agent, and vocational counselor.

Planning and coordinating team services should be the primary responsibility of the professional(s) treating and providing ongoing intervention with an individual using an AAC system. This professional(s) needs to possess knowledge in the area of language development and communication interaction, both of which are critical to the success of an individual's AAC program. In most instances, the speech-language pathologist is the person most qualified to meet these requirements (ASHA, 1981). The professional role of the speech-language pathologist is based on the guidelines set forth in "Competencies" and includes the following:

- Identification of persons who might benefit from AAC intervention;
- Determination of specific AAC components and the strategies needed to maximize functional communication;
- Development of an intervention plan to achieve maximal functional communication between individuals who use AAC components and their communication partners;
- Implementation of an intervention plan to achieve maximal functional communication;
- Evaluation of the functional communication outcomes of the intervention plan;
- Evaluation and application of evolving AAC aids, techniques, symbols and strategies in AAC;
- Advocacy for increased attention from community, regional, government and education agencies to the communication and funding needs of persons with severe speech and language impairments;
- Consultation with the individual using AAC, family, caregivers and allied personnel regarding communication status and AAC needs and intervention approaches;
- Provision of inservice education for medical and allied health personnel, other health and education professionals, and consumers on the communication needs and AAC potential of individuals with AAC needs;
- Coordination of AAC services;
- Development of follow-up procedures to evaluate the effectiveness of an individual's AAC system;
- Development of procedures to disseminate clinical, educational, and research information in AAC; and
- Recognition of the need for and promotion of basic and applied research in the field of AAC.

The primary role of the audiologist in the service delivery model is the assessment and treatment of auditory function. The hearing evaluation may be best accomplished through a cooperative approach with the speech-language pathologist or other AAC member(s) on the team. The standard audiological assessment may need to be adapted to meet the optimal response mode and strategies of the individual using AAC. The audiologist shall develop and maintain an appropriate listening environment for the person using AAC. The audiologist should participate, as needed, in the ongoing intervention program.

Service Delivery

1) Determination of the AAC Intervention Program

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An interdisciplinary approach to an assessment for an AAC system is recommended. The purpose of the assessment is to develop an effective intervention program. It may include evaluation of physical, sensory, emotional, cognitive, and educational performance; speech and language skills; auditory skills; correct seating and positioning; general communication skills; communication needs (conversational and written) for social, emotional, educational, and/or vocational purposes; and family needs. Consideration should be given to the individual's present and future skills and needs. The nature and quality of supportive services should be addressed, as well.

In view of limited empirical data to support the requirement for prerequisite skills, communication intervention should be initiated at the level of existing cognitive skills. It is also recognized that some individuals may not demonstrate sufficient progress in the treatment program to require ongoing intervention by the speech-language pathologist.

2) Selection and Development of an Effective AAC System

Once the need for intervention has been determined, the AAC system, which can provide the individual with the most effective and functional communication, needs to be selected and developed. The system should be multimodal, including a range of techniques and strategies to provide the individual with a functional AAC system in multiple environments and situations. System selection involves the consideration of aided and unaided AAC techniques, including natural speech and gestures. In addition to determining the physical means of access, a symbol system with appropriate vocabulary and communicative messages should be implemented.

3) Service Implementation and System Integration

Once a system has been selected, the individual using AAC will be provided with training in strategies to enable effective utilization of the techniques and symbol systems for the achievement of communicative competence, as defined by the communication needs of the individual and the message-receiving community. This instruction includes use of appropriate techniques and selected symbols; strategies for developing language for effective communicative interaction in both structured and natural environments; facilitation of language (re)acquisition, and speech training, if appropriate, pragmatic communication goals; and the training of persons who interact with individuals using AAC. The speech-language pathologist must allocate sufficient time to implement the AAC system effectively.

4) Follow-Up and Ongoing Evaluation

Appropriate implementation includes: (a) the ongoing evaluation of communication/interaction effectiveness; (b) the need for appropriate alteration of the system and communication strategies, if indicated; (c) preparatory training for future facilitators; and (d) training for future use of different or more complex systems.

Speech-language pathologists and audiologists who are knowledgeable about AAC have a professional responsibility to share information through inservices and interpersonal communication with other professionals who may be serving the individual using AAC.

Quality Assurance

1) Ethics

The Code of Ethics (ASHA, 1990) of the American Speech-Language-Hearing Association, stresses the professional responsibility of speech-language pathologists and audiologists in providing services. Professionals in the area of AAC must observe the fundamental rules of ethical conduct. Components of the Principles of Ethics that are particularly relevant to the area of AAC are:

Principle of Ethics I: Individuals shall hold paramount the welfare of persons served professionally.

A. Individuals shall use every resource available, including referral to other specialists as needed, to provide the best service possible.

B. Individuals shall evaluate services rendered and products dispensed to determine effectiveness.

Principle of Ethics II: Individuals shall maintain high standards of professional competence.

B. Individuals shall identify competent, dependable referral sources for persons served professionally.

- Ethical Proscriptions

  1. Individuals must neither provide services nor supervision of services for which they have not been properly prepared, nor permit services to be provided by any of their staff who are not properly prepared.

Principle of Ethics III: Individuals' statements to persons served professionally and to the public shall provide accurate information about the nature and management of communicative disorders, and about the profession and services rendered by its practitioners,

- Ethical Proscriptions

  1. Individuals must not misrepresent their training or competence.
  2. Individuals' public statements providing information about professional services and products must not contain representations or claims that are false, deceptive, or misleading.
  3. Individuals must not use professional or commercial affiliations in any way that would mislead or limit services to persons served professionally.

Principle of Ethics IV: Individuals shall honor their responsibilities to the public, their profession, and their relationships with colleagues and members of allied professions.

- Ethical Proscriptions

  1. Individuals must not participate in activities that constitute a conflict of professional interest.

Principle of Ethics V: Individuals shall uphold the dignity of the profession and freely accept the profession's self-imposed standards.

- Ethical Proscriptions

  1. Individuals shall not engage in violations of the

Principles of Ethics or in any attempt to circumvent any of them.

2. Individuals shall not engage in dishonesty, fraud, deceit, misrepresentation, or other forms of illegal conduct that adversely reflect on the profession or the individual's fitness for membership in the profession.

2) Efficacy

Speech-language pathologists must determine whether an individual's AAC progress bears a direct relationship to the type and frequency of AAC intervention. As such, the speech-language pathologist must assume responsibility for developing outcome measures that focus on the effectiveness of AAC services. This requires that the speech-language pathologist carefully selects the behaviors and measurement tools that will accurately reflect the impact of the intervention (Beukelman, 1986).

3) Professional Preparation

Competency areas, knowledge base, and skills are identified in "Competencies." All speech-language pathologists and audiologists should have the knowledge and skills to evaluate and provide services to the individual with severe communication impairments, although it is acknowledged that clinicians will have developed varied levels of competence in the area of AAC service delivery.

Although educational preparation and training programs offering instruction or clinical experience in AAC have increased, not all programs provide sufficient AAC training. It is imperative, therefore, that speech-language pathologists and audiologists who provide services to individuals using AAC participate in ongoing continuing education. This can be achieved through consultation with experienced AAC providers, conference and workshop attendance, and researching the AAC literature.

Individual Rights

The speech-language pathologist and audiologist should recognize and hold paramount the interests and rights of the individual using an AAC system by being sensitive to individual cultural and linguistic needs. Individuals using an AAC system should be an integral part of the service delivery process. The individual's interests should be a primary consideration in the selection and implementation of a communication system. Opinions of the individual, family and caregivers need to be sought and considered when providing new or updating existing families and caregivers equipment and services.

Funding

It is important for the speech-language pathologist coordinating AAC services to have access to current funding information. In order to maintain quality services, every effort should be made not to compromise the needs of the individual on the basis of cost. Funding is needed to support the assessment process, system acquisition and maintenance, intervention programs, and follow-up services. In addition, funds need to be available to support research and continuing education activities.

Research

There is a major need to expand the research upon which AAC service delivery is based. Both basic and applied research are needed. Some of the areas that have been identified include: (a) all aspects of symbols/systems; (b) assistive technology; (c) development of communication competence and interaction; (d) literacy; (e) education, vocation, and quality of life; (f) efficacy; (g) epidemiological and demographic characteristics; (h) training of professionals and communicative partners.

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Goossens, C. & Crain, S. *Augmentative communication: Intervention resource.* Lake Zurich, IL: Don Johnston, Inc.

SELECTED AUGMENTATIVE COMMUNICATION PUBLICATIONS

Augmentative Communication News. Sunset Enterprises, One Surf Way, Ste 215, Monterey, CA. 93940

Augmentative and Alternative Communication. (A quarterly journal sponsored by the International Society for Augmentative and Alternative Communication.), Williams and Wilkins, 428 E. Preston Street, Baltimore, MD, 21202-3993.

Communication Outlook. (An affiliate publication of the International Society for Augmentative and Alternative Communication.), Artificial Language Laboratory, Michigan State University, 405 Computer Center, East Lansing, MI 48824-1042.

Communicating Together. (An affiliate publication of the International Society for Augmentative and Alternative Communication.), Sharing to Learn, PO Box 986, Thronhill, ON Canada L3T 4A5.

ENVIRONMENTAL CONTROL

The Project ASTECH software explores environmental control devices, discusses assessment, and introduces installation, programming and troubleshooting strategies. A list of all the environmental control devices mentioned in the Project ASTECH software is included in your Resource Guide to assist you in contacting companies and ordering these devices. In our software program it would be impossible to include information about every available device on the market. Our purpose was to give you categories and characteristics of devices with representative examples. You are encouraged to add information about other devices to your Resource Guide.

In the ASTECH software program, you learned about several representative samples of simple and complex devices. Because of the number and varying degrees of complexity of environmental control devices, we have included a comparison chart to help you sort through devices. You also will find directions for constructing your own battery interrupt, which was shown and discussed in the software.

The programming and troubleshooting strategies you learned about in the software are included in checklist forms for your future use.

Contents

List of Devices in ASTECH Software 1EC
ECU Chart 2EC - 7EC
Battery Interrupts 8EC - 14EC
Programming Checklist 15EC
Troubleshooting Checklist 16EC

LIST OF DEVICES - ENVIRONMENTAL CONTROL

We have mentioned devices as representative examples within our software program. Here is a list of those devices and the companies from which they may be purchased. These companies also sell other products that you may be interested in. The companies' addresses and phone numbers are listed in the Resource List of the General Information section of this Resource Guide.

Device	**Company**
acs Controller	ACS Technologies
Big Red® switch	AbleNet, Inc.
Next Page Page Turner	TASH, Inc.
Plug 'n Power™	Radio Shack
PowerLink 2 ™	AbleNet, Inc.
PROXi	Madenta Communications, Inc.
Scanning Director™	Prentke Romich Co.
Simplicity Series 5	Quartet Technologies
Single Switch-Multi-Appliance Control Unit	Toys for Special Children
Switch Latch and Timer	AbleNet, Inc.
Ultra 4	TASH Inc.

Electronic Environmental Controls Product Evaluation Form

Date ______

Name/Initials ______

Product Name ______

Manufacturer ______

Dimensions/Weight ______

Retail Price ______

Access Modalities

- ☐ keypad number of keys: ☐
- ☐ switch switch type(s): ☐ single ☐ dual ☐ multiple
- ☐ joystick joystick type: ○ digital/switch ○ proportional
- ☐ voice
- ☐ serial
- ☐ Other…

notes

Feedback

- ☐ none
- ☐ LEDs
- ☐ character display
- ☐ beeps / tones
- ☐ speech synthesis
- ☐ Other…

Major Control Modes

- ☐ direct AC power number AC appliances: ☐
- ☐ X–10 no. of X–10 modules: ☐
- ☐ Universal Infrared number of IR devices: ☐ total number of IR commands: ☐
- ☐ Telephone no. of pre-stored numbers: ☐ ○ built-in phone

phone limitations: ○ speaker-phone only ○ autodial/recording only

☐ product requires AC line voltage
☐ product requires batteries

Auxiliary Control Modes

- ☐ switch / circuit closure
- ☐ call signal
- ☐ ultrasound
- ☐ hospital bed
- ☐ hospital television
- ☐ keyboard emulation
- ☐ mouse emulation
- ☐ Other…

number of circuit or switch closures: ☐

type of circuit or switch closure(s): ○ 1/8" jack ○ screw terminals ○ Other…

notes

Product Description

This form created by Bruce Bailey of the Oklahoma Assistive Technology Center (405/271-3625). Data collected is potentially part of a public domain database on electronic environmental contorls. Please contact if you are interested!

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ENVIRONMENTAL CONTROL UNITS COMPARISON CHART

ECU NAME	INPUT				CONTROLS					BATTERY BACKUP	INTERFACES	COMMENTS	COST
	DIRECT	SWITCH	VOICE	SERIAL	X-10	PHONE	IR	BED	OTHER				
ACS Controller ACS Technologies, Inc 800 227 2922	X	single	X	X	X	(IR)	X	(X)	most Infrared controlled devices (up to 85 IR commands) computer control (future)	charger battery	computer *IBM* AAC	auto power on,keyguard changeable overlays programmable sends ultrasound & radio	$2195 base $3495 voice
a Butler in a Box b E C U c Series II AVSI 800 628 5837			X		X	X	X	X	alarm, timers, voice mouse, sprinkler control		computer *IBM* *with voice mouse ($309)*	a. 2 user voice control b. single user voice control c. 4 user voice control installation $500-600 IR controller $349	a $2995 b $1795 c $3995
CCT Env Control Consultants for Comm. Technology 412 761 6062		single		X	16		X		most infrared controlled devices	yes	computer *IBM*	software/hardware package	$470
a CINTEX b CINTEX 2 NanoPac, Inc 918 665 0329		single, dual, joystk (a)	X	X	256	X	X	(X)	108 IR commands 64,000 phone entries redial, flash for call waiting		computer *IBM* required	phone, IR, X-10 standard X-10 modules additional b. Dragon Dictate Interface	a $1290 - $2280 b $695 - $2280
Control 1 Prentke Romich Company 800 262 1984		single dual		X	256	X	(X)	X	8 control receptacles, latching or momentary ie. call signal, page turner, door, intercom	optional	computer *serial port* AAC	Control Input Display cables separate cost wireless data system for remote operation	$1965 3815 (master)
ControlPAC ACS Technologies 800 227-2922				X	4					yes *through AAC*	RealVoice ScanPAC EvalPAC required	Modules $40 each	$470
DEUCE DU-IT Control Systems Group 216-567-2001		single dual			(16)	X	(X)	(X)	operates Hospital TV, too	optional $210 several hours	computer AAC	remote display $375 X-10 needs DX-10K $195 bed control $435 remote control SRC $450	$1350 (base) - 1800
Director Prentke Romich Company 800 262 1984				X	(16)	(IR)	X	(X)	infrared controlled devices (up to 150 commands)	battery run off device	AAC required	need Command Center for X-10 control $140 memory back-up on computer	$495

(optional)
X-10 on/off for lights, appliances, fan, buzzer, etc.
IR infrared control of TV/VCR, stereos, or other IR controlled devices
AAC augmentative alternative communication device. Must have serial port.
serial input can be controlled by AAC or computer with serial port through adaptations to that device (ie. switches).

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3EC

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ENVIRONMENTAL CONTROL UNITS COMPARISON CHART

ECU NAME	INPUT				CONTROLS					BATTERY BACKUP	INTERFACES	COMMENTS	COST
	DIRECT	SWITCH	VOICE	SERIAL	X-10	PHONE	IR	BED	OTHER				
DynaVox 2, 2c Sentient Systems 800 344-1778	X	single			(X)	IR	X		X-10s with Command Center	yes	AAC *DynaVox 2,2c* required	available summer 1995 built-in ECU control from the DynaVox AAC price varies with features	$4995-7995
EZRA KY Enterprises 310 433 5244		single remote			X	X	X	X	door opener, intercom, limited vocabulary speech synthesizer	none		must be able to read (does have blind access - diff. to use) menu word display	$950 - 1775
HAL (Home Automation Link) Voice Connection 714 261-2366			X		(X)	X	(X)	(X)	16 relays for control of beds, motors, and electrical subsystems		computer *IBM* required	optional remote wireless microphone speech output	$1295
HECS-1 Hospital EC System Prentke Romich 800 262-1984		dual			(X)	X	X hospit.	X	nurse call (pendant) X-10 control with Scanning X-10 Powerhouse	none	AAC	remote display English or Spanish	$3860
Home Automation Interface X-10 (USA), Inc 800 526 0027	X	joystk		X	X				accessories. thermostat	no	computer *Apple, Mac, Comm., IBM* AAC	computer control panel connects to computer, can be used separately modules additional	$69.99
Imperium 100 Teledyne Brown Engineering 800 944 8002	X	single			8					yes 10 hours		user configurable	$365
Imperium 200H Teledyne Brown Engineering 800 944 8002		dual			256	built-in spkr.	X	X	spare relays, talking clock, private listening via headphones, ltd. AAC, volume control, petite	yes 6 hours		auditory scanning remote model pending built-in telephone visual menu display	$3195 master
Intelligent Home Controller AVSI 800 628 5837	X				256	(IR)	X		99 smart timers, alarm, IR control interface $346 32 macros, voice mouse		computer *IBM*	controls computer by voice mouse	$3860

(optional)
X-10 - on/off for lights, appliances, fan, buzzer, etc.
IR - infrared control of TV/VCR, stereos, or other IR controlled devices.
AAC - augmentative alternative communication device. Must have serial port.
serial input - can be controlled by AAC or computer with serial port through adaptations to that device (ie. switches).

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ENVIRONMENTAL CONTROL UNITS COMPARISON CHART

	INPUT				CONTROLS								
ECU NAME	DIRECT	SWITCH	VOICE	SERIAL	X-10	PHONE	IR	BED	OTHER	BATTERY BACKUP	INTERFACES	COMMENTS	COST
Kincontrol TASH, Inc. 800-463-5685		single or dual			(X)	(X)	(X)	(X)	controls 10 devices ie. call bell, relay, TV, intercom, phone, lights	none	computer *serial port* AAC	alternative remote input: Ultra 4, RELAX scanning auditory feedback	$800 base
LIAISON DU IT Control Systems Group 216-567-2001		joystk (DU IT)			(X)	X	(X)		3 accessories, separate monitor, 6 AC outlets		computer *IBM, Mac, IIgs* wheelchair *DU IT controls*	requires precise control mouse emulation ($330 per emulator)	$3750 - $3930
MARC II Home Control System Vaux Electronics 602-894-2350	X			256	X	(IR)	X		drapes, macros, timers, time and event based schedules		computer	240 IR codes remote control $320 computer optional, open system	$690 base
Maxi Controller X-10 (USA), Inc. 800-526-0027	X				16				Thermostat	none		can be used with mouthstick	$24.99
Personal Attendant High Tech Intelligence, Inc. 303-695-0609			X	X	X	X	X	X	accessories: heat, air conditioning, door, windows, drapes, electrical devices	several hours	computer *IBM included*		$16,000
PROXi Madenta Communication, Inc. 403-450-8926			(X)	X	X	X	X		intercom		computer *Mac, IBM* AAC	wireless microphone (add $3395) $400 voice software wireless serial $695	$2495
Relax TASH, Inc. 800-463-5685		single			(10)	(IR)	X		Infrared controlled devices (up to 40 IR commands)			X-10 controller $450 auditory scan adjustable scanning	$500
Scanning Director Prentke Romich Company 800-262-1984	(X)	single dual		X	(16)	(IR)	X	(X)	infrared controlled devices (up to 150 commands)		AAC HECS ECU	stand alone or mount X-10 Command Center $140 (up to 150 IR commands)	$685

(optional)
X-10: on/off for lights, appliances, fan, buzzer, etc.
IR: infrared control of TV/VCR, stereos, or other IR controlled devices.
AAC: augmentative alternative communication device. Must have serial port.
serial input: can be controlled by AAC or computer with serial port through adaptations to that device (ie. switches).

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ENVIRONMENTAL CONTROL UNITS COMPARISON CHART

ECU NAME	INPUT				CONTROLS					BATTERY BACKUP	INTERFACES	COMMENTS	COST
	DIRECT	SWITCH	VOICE	SERIAL	X-10	PHONE	IR	BED	OTHER				
Scanning Remote Control DU IT Control Sys. 216-567-2001		single dual			8		X			yes	wheelchair	left side - TV control right side - X-10 or VCR/Stereo control $195 per side, $210 X-10	$450 - $800
Scanning X-10 Powerhouse Prentke Romich 800-262-1984		single dual			8-16					yes	wheelchair	remote battery operated 16 needs additional receiver $70	$640
SenSei Salko International, Inc. 602-731-9805			X	X	X	X	X	X	heat, air conditioning, security, full computer control		computer *Mac included*	controls software applications speech output	call vendor
a Simplicity, series 5 b Simplicity, series 6 Quartet Technology 508-692-9313			X		X	X	X	X	accessories: page turner, door opener, etc.	up to 1 hour	computer *series 6*	speech feedback response remote microphone available	a $3750 b $4750
Simplicity, series 7 Quartet Technology, Inc. 508-692-9313		single			X	X	X	X		1 hour		auditory scanning remote	$3750
Smart House GEWA Infra-Link, Inc. 800-395-3596	X 1-8 button	single		X	(IR)	X	X	X	intercom, door, window, elevator, garage door, curtains, page turner, alarms, van lift, thermostat	remote charger	wheelchairs	uses GEWA infrared receivers modules $190 IR GEWA telephone $695	$895 - $2100 packg kit
TEAM - transparent envir. acc. module Microsystems Soft. 800-828-2600				X	X	(X)	X				computer **required** *IBM*	not remote Windows support pending	$495
TimeCommander JDS Technologies 619-487-8787				X	X		X		timers, macros, security. Time and event based schedules	yes	computer **required** *IBM*	requires IR-Xpander for IR control $100 interface with Dragon Dictate pending	$295

(optional)
X-10: on/off for lights, appliances, fan, buzzer, etc.
IR: infrared control of TV/VCR, stereos, or other IR controlled devices.
AAC: augmentative alternative communication device. Must have serial port.
serial input: can be controlled by AAC or computer with serial port through adaptations to that device (ie. switches).

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ENVIRONMENTAL CONTROL UNITS COMPARISON CHART

	INPUT				CONTROLS								
ECU NAME	DIRECT	SWITCH	VOICE	SERIAL	X-10	PHONE	IR	BED	OTHER	BATTERY BACKUP	INTERFACES	COMMENTS	COST
HCS 1000 newAbilities 800 829 8889	keypad	tongue touch keypad			X	X	X	X		yes, if run from w/c battery	computer *Mac, IBM* AAC wheelchairs	9 keys Integrated system visual word display menu remote keypad	call vendor
Ultra 4 remote system TASH, Inc 800 463 5685	X	single dual			4				controls any switch accessible device and simple apliances (ie. lights, fan, radio)	yes		ultrasonic modules $50 direct access trans. $50 large key transmitter $260 dual $300 single $130	varies by config
Unidialer II TASH, Inc 800 463 5685		single			4	X	(X)		built-in speakerphone telephone access with scanning			controls TV and other IR devices with Relax	$800 base
VoiceCommander JDS Technologies 619 487 8787		single dual	X		X	X	X		heating/cooling, security, intercom, doors, gates			requires TeleCommand System 100 up to 50 voice commands built-in speakerphone	$995 package
Wireless Remote Control RC5000 X-10 (USA), Inc 800 526 0027	X remote				8					yes		can use more than one receiver can use mouthstick modules $15 each	$50

(optional)
X-10 on/off for lights, appliances, fan, buzzer, etc.
IR infrared control of TV/VCR, stereos, or other IR controlled devices.
AAC augmentative alternative communication device. Must have serial port.
serial input can be controlled by AAC or computer with serial port through adaptations to that device (ie. switches).

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A Switch To Turn Kids On

A Guide For Constructing Adaptive Devices

Macomb Projects • College of Education • Western Illinois University • Macomb, IL 61455

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Patricia Hutinger, Ed. D., Director

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10EC

A Switch To Turn Kids On

Battery Interrupter

Materials

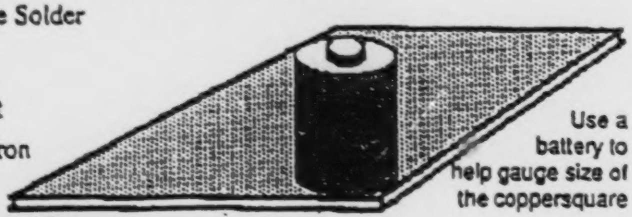
24 or 24 Gauge, Polarized Stranded Wire (Radio Shack #278-1301 or #278-1385)

Miniature Inline Jack (Radio Shack #274-333)

Double-Sided Copper Clad Board

Rosin Flux Remover (Radio Shack #64-2051)

Rosin Core Solder



Use a battery to help gauge size of the coppersquare

Equipment

Soldering Iron

Hack saw

Wire Strippers/Cutters

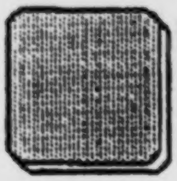
Needle Nose Pliers

Scissors

Permanent Ink Marker

Instructions

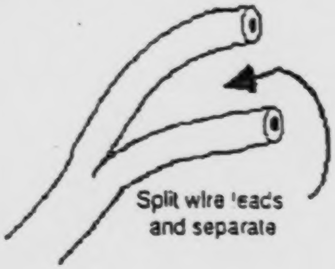
1. Determine a size for the battery interrupter that you are going to make. The interrupter should be of comparable size to the batteries in the device in which it will be used. Place an appropriately sized battery over the copper board and use a marking pen to mark its size. (The width of the copper square should be approximately equal to the diameter of battery. Use a small hack saw to cut out the copper square.



Bevel edges and corners of copper square

2. After cutting out the copper square you will notice that the edges of the square are rough and jagged and corners are sharp and pointed. For this reason, the edges and corners of the copper square should be beveled. Use a small metal file to smooth the rough edges and round the sharp corners.

3. Use wire cutters to cut a piece of the polarized wire that is about 6 to 8 inches long. (This length should be adequate for most situations; however, if your particular application requires a longer or shorter length, cut the wire to the desired length.) After the wire has been cut, the leads at both ends must be separated and stripped. To separate the leads, use the wire cutters to make a small cut directly between the two



Split wire leads and separate

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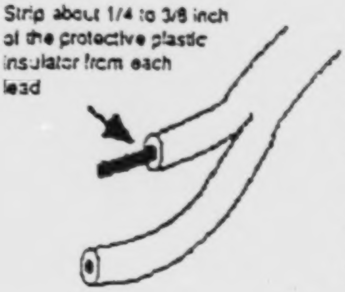
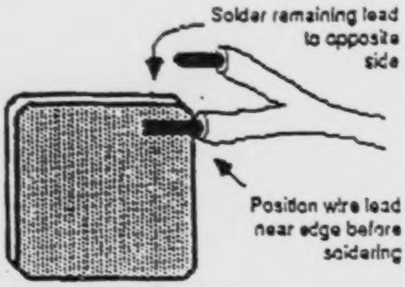

Strip about 1/4 to 3/8 inch of the protective plastic insulator from each lead

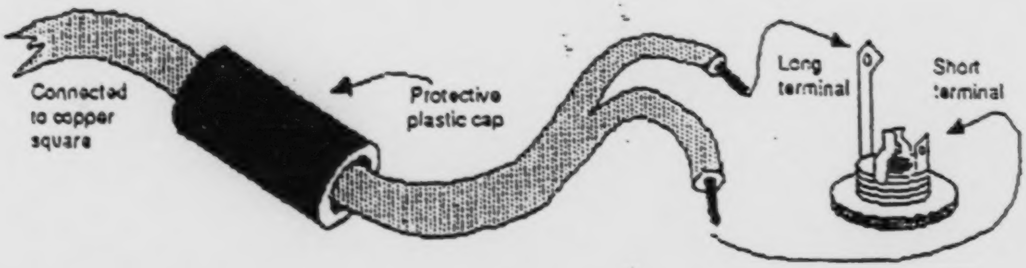
leads at both ends of the wire. Carefully pull the leads apart. Note that each lead retains its own protective plastic insulator. Separate the leads by about 1/2 to 3/4 inch on one end of the wire and by 1 1/2 to 2 inches on the other.

4. Use wire strippers to carefully remove 1/4 to 3/8 inch of the protective plastic insulator from each of the wire leads. After all four leads have been stripped, you will be ready to solder the bare wire leads on one end of the wire to the copper square.

5. Position the copper square in front of you and select the end of the wire that has the leads separated by only 1/2 to 3/4 inch. Flatten the exposed wire extending from each lead (do not twist the strands together). Position the wire along one edge of the copper square. The insulator of the wire lead you are soldering should be touching the edge of the copper square. Flip the copper square over and repeat this procedure with the other lead.


Solder remaining lead to opposite side
Position wire lead near edge before soldering

6. Connect the miniature phone jack to the other end of the wire. Unscrew the protective plastic cap from the phone jack, thread the wire leads through the cap and slide the cap down the wire and out of the way. Thread one of the exposed wire leads through the hole in the positive (short) terminal. Thread the wire through from the inside to the outside, bend the exposed wire over so that it is flush with the terminal, and solder it in place. Do the same thing with the remaining lead and the negative (long) terminal. After both connections have been soldered, cut a small piece of electrical tape and carefully wrap it around the connection on the positive (short) terminal making sure that all of the exposed wire is covered. Slide the protective plastic cap back down over the exposed connections and reconnect it to the jack.


Connected to copper square
Protective plastic cap
Long terminal
Short terminal

Tips on Batteries

Batteries play an important role in the performance and reliability of many everyday appliances, toys, and devices. Because of the different types, sizes, and electrical characteristics of the batteries, care must be taken in selection and replacement.

Here are some hints from AbleNet for selecting and using batteries that will give your equipment the power needed to run efficiently:

- Batteries are not interchangeable! They do not deliver the same level of current, voltage or length of service.

- Alkaline batteries will always outlast regular (carbon-zinc) batteries. An alkaline battery used in a motor toy will last up to 1,000% longer than most carbon-zinc batteries.

- Do not combine different types, ages, grades, or name brands of batteries in the same device.

- Make sure that battery contacts are clean and shiny; also store batteries in a cool area. Heat greatly reduces battery longevity.

- Never attempt to recharge a battery unless it is clearly marked "rechargeable."

- Alkaline, silver, mercury, nickel-cadmium, and lithium batteries must not be disposed of by burning because toxic substances can be released into the environment. Check community sources for appropriate disposal.

- To slow down a toy, wrap a dead battery in aluminum foil.

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ENVIRONMENTAL CONTROL GENERAL PROGRAMMING STEPS*

Programming is the completion of specific steps with equipment to enable students to do something they could not do before. When we discuss programming simple environmental controls, the desired result is that students can turn electrical appliances on and off.

Programming Steps

You will find these general programming steps apply to most simple environmental control units that turn electrical appliances on and off, however, programming steps may be more complex when programming more complex ECUs.

1. **Identify or set code on receiver module**
   Codes may be made up of letters, numbers or colors. The code identifies which receiver module/appliance will be turned on and off.

2. **Identify or set code on transmitter**
   The code on the transmitter must match the code on the receiver module.

3. **Use corresponding button on transmitter to turn appliance on and off**

Some environmental control units will simply follow these general steps. Other devices may have several substeps within a step.

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* Taken from Project ASTECH software

ENVIRONMENTAL CONTROL GENERAL TROUBLESHOOTING STRATEGIES*

Troubleshooting is a strategy used to locate and correct a problem. When using an environmental control unit, a common problem you may encounter is the appliance does not turn on or off.

General Troubleshooting Checklist:

Device ______________________
Company Name ______________________
Company Phone # ______________________
Date ______________________
Problem ______________________________

Have the correct codes been programmed or identified?

Are you using the correct button on the remote transmitter?

Is the appliance in the "on" position?

Does the appliance work when plugged into a regular electrical outlet?

Have you checked the batteries in the remote transmitter?

After using these general troubleshooting strategies, if the device still does not work correctly, do the following:

- Check the device manual for more detailed, specific troubleshooting strategies.
- Call the company. Make sure you have the device in front of you when you call.

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* Taken from Project ASTECH software

ASSESSMENT

In the Project ASTECH software, you learned that the "team" is involved in assessing students and matching assistive technology to meet those students' needs. We have included a handout which defines who makes up the assistive technology team and the roles and responsibilities of each team member. It is important that each team has clearly defined responsibilities and roles which meet the needs of the team and their specific situation. Another handout, Description of Areas to be Assessed and Known Tests to Be Used, has been provided for you to list the specific tests used in your setting. This may assist your team in designating assessment responsibilites and protocol.

We have provided screen printouts from the Project ASTECH software and made them into useable forms for you to use. Please use whichever form you find most useful. The context questions are listed on both forms so you can address these issues regardless of which form you choose to use.

You may have noticed the Scanning Assessment Tool software that is in a separate folder on your CD. This section of your Resource Guide includes the manual that you will need in order to use it.

Content

Roles of Team Members 1A - 2A

Assessment Areas 3A

Computer Access Assessment 4A - 8A

Augmentative Communication Assessment 9A - 13A

Environmental Control Assessment 14A - 17A

Scanning Assessment Tool 18A - 33A

ROLES OF TEAM MEMBERS

Research and practice suggest that teams function best when roles and responsibilities are clearly delineated. The members who usually make up a child's team are described below:

- Child - Children are the only constant on the team, bringing with them their unique personalities, abilities, challenges, and fantasies. The children are active participants, and their opinions must be respected and valued. After all, they are the ones who will or will not benefit from technology, and will or will not use it.

- Family - The family provides support and helps to develop the child's world knowledge base. It is important to realize that many families have concerns unrelated to their children with disabilities that will affect their level of participation. In some cases, cultural issues and existing family dynamics may even inhibit active involvement. Varying degrees of participation are understandable and acceptable. The family can be a child's best advocate and can develop a child's sense of confidence, self-esteem, and independence.

- Aides/instructional assistants - These individuals work with teachers to implement the curriculum and make learning possible. They play a key role in fostering peer interaction, self-confidence, and independence.

- Audiologists - Audiologists test hearing, recommend hearing technologies, and provide instruction in the use of hearing technologies. They also give suggestions for enhancing children's listening skills.

- Classroom teachers - The classroom teacher is responsible for the child's total education program. The teachers must balance the activities and time available during the school day and collaborate with the family and other professionals to ensure that the "educational path" is followed. They develop and implement educational strategies that allow assistive technology users to participate in classroom activities so that functional, academic, and social goals can be accomplished.

- Occupational therapists - Occupational therapists, like physical therapists, evaluate children's posture and mobility. Occupational therapists then recommend and implement procedures and devices that will meet seating and mobility needs. In addition, occupational therapists help determine which devices and strategies children can use to access other technologies, such as those for learning and communicating, as well as moving.

- Peers - Children's peers may be friends, classmates, helpers, and tutors. Peers provide emotional support and a special link to certain aspects of children's lives in which adults have little involvement. They provide models for learning and communicating.

- Physical therapists - Physical therapists evaluate children's posture and mobility and are subsequently involved in recommending and implementing a variety of techniques, devices, and strategies that will appropriately, position the children to facilitate their comfort, proper development, and safety, and that will increase their mobility.

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- **Physicians** - Physicians address medical issues and monitor medical complications. They are involved in the prescription of the seating and, and often, the mobility device. The physician helps to procure funding from third-party payers (e.g., insurance companies).

- **Psychologists** - Psychologists assess children's intellectual abilities and learning styles. They must be skilled at making necessary adaptations to determine a child's cognitive functioning, taking into account present physical disabilities and behavioral characteristics.

- **School principals, directors of special education, superintendents** - These designated leaders have job descriptions that involve management of educational programs and fiscal issues. They are leaders and set the tone. They understand the school system and often can make things happen. They have the authority to allocate staff time as deemed appropriate. Their support is often critical to the successful implementation of assistive technology.

- **Special educators** - Teachers with special education backgrounds develop an in-depth understanding of each child's cognitive profile and learning style as they relate to the curriculum. Based on this knowledge, the special educator can modify curriculum goals and materials and provide additional resource support, such as recommending software that enables children to participate in classroom activities (e.g., art projects, creative, writing).

- **Speech-language pathologists** - Speech-language pathologists suggest ways to maximize a child's speech, language, and communication during each activity (e.g., use of a communication device during circle time and a miniboard at home during bathtime). They often help develop vocabularies, design overlays, suggest strategies to facilitate interaction, and integrate speech and language development into the educational curriculum.

- **Team facilitator** - This individual possesses the knowledge and the skills to coordinate team meetings, ensure follow-through of team goals, see that time lines are met, and generally manage team activities so that no activity deemed important "falls through the cracks."

- **Technical resource personnel** - Rehabilitation engineers and / or technologists and assistive equipment suppliers / manufacturers help make decisions when specific technology is being considered. They can assist in procuring, designing, fitting, and maintaining the equipment and can also help setting up / modifying equipment and software and designing work stations.

The individuals cited above play an important part in helping children use technology effectively. The roles they play often vary; those who implement the use of technology are not always the same as those who prescribe or design it.

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Description of Areas to be Assessed and Known Tests to Be Used

Areas to be Assessed	*Description and Known Tests To Be Used*
___ Vision	Measures a student's near and far point visual acuity, eye muscle control, depth perception, color blindness, orientation/mobility skills, ***and the need for/use of magnification and refraction systems***. Known tests to be used: ______________________ ______________________
___ Hearing	Measures a student's hearing acuity for pure-tones and speech, middle ear function, central auditory processing skills, ***and the need for/use of amplification systems***. Known tests to be used: ______________________ ______________________
___ Health/Motor	Measures a student's physiological and neurological condition including gross and fine motor skills, metabolic functioning, evidence of disease or injury, ***and the need for/use of personal mobility systems***. Assessment may also include laterality, directionality, balance, kinesthetic skills, tactile skills, and ambulatory/postural problems. Known tests to be used: ______________________ ______________________
Speech/Language	Measures a student's articulation skills, auditory perception, voice, fluency, receptive/expressive language development, ***and the need for/use of augmentative or alternative communication systems***. Known tests to be used: ______________________ ______________________
___ Intellectual/Cognitive	Measures a student's general mental abilities including specific strengths and weaknesses, and sensory perceptual learning processes. Known tests to be used: ______________________ ______________________
___ Adaptive Behavior	Measures a student's ability to function and maintain self independently, and the degree to which the student meets satisfactorily the culturally imposed demands of personal and social responsibility. Known tests to be used: ______________________ ______________________
___ Social/Emotional Behavioral	Measures a student's behavioral/social/emotional development in relation to learning, interpersonal relationships, and self. Known tests to be used: ______________________ ______________________
Academic Achievement	Measures a student's educational skills and achievement levels including pre-academic, academic, career, and vocational education ***with and without the use of assistive technology as appropriate***. Known tests to be used: ______________________ ______________________

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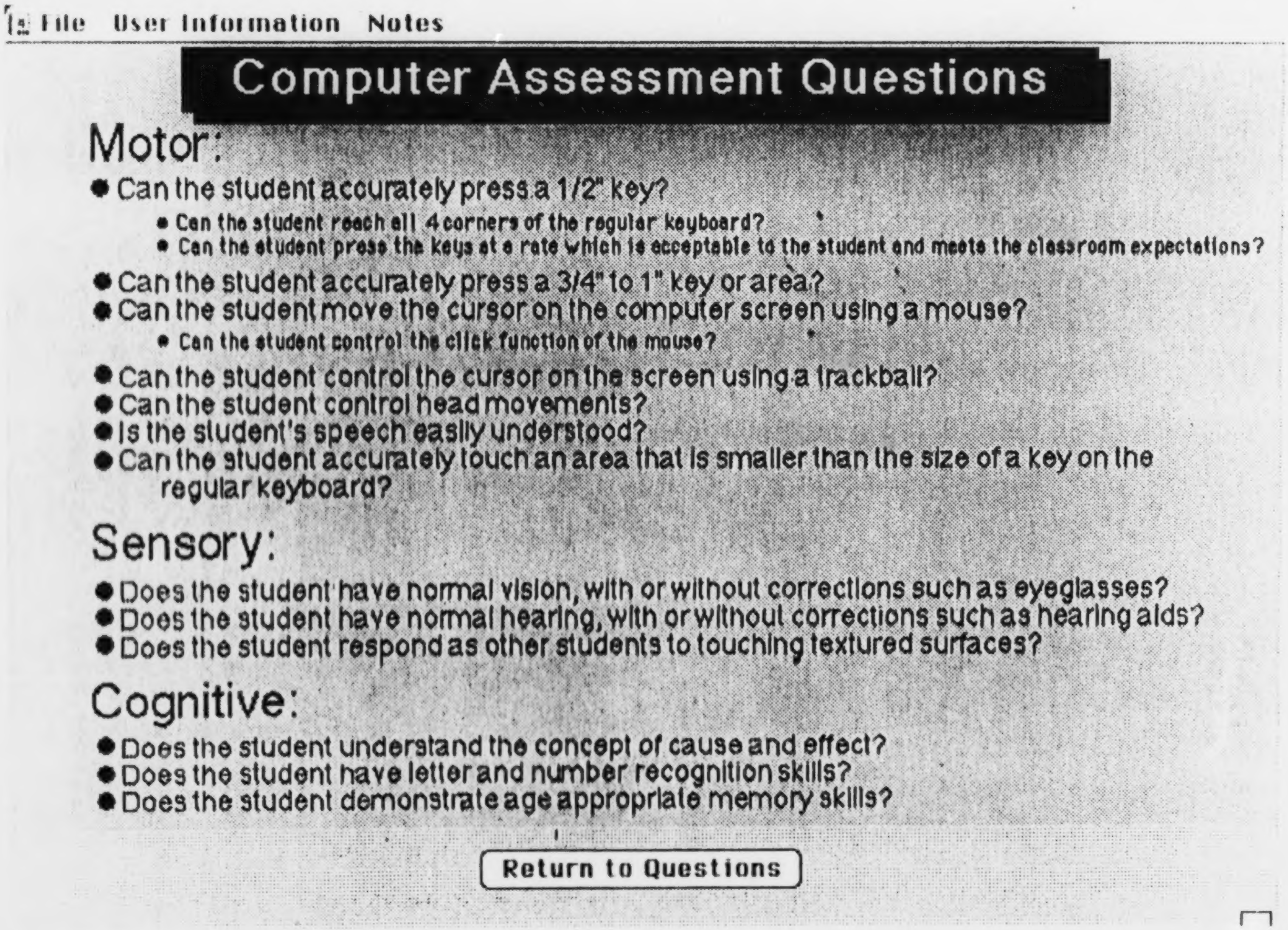
3A

Screen printouts from Project ASTECH-Assistive Technology Training Through Multimedia (1996)

4A



Computer Assessment Questions

Motor:

- Can the student accurately press a 1/2" key?
    - Can the student reach all 4 corners of the regular keyboard?
    - Can the student press the keys at a rate which is acceptable to the student and meets the classroom expectations?
- Can the student accurately press a 3/4" to 1" key or area?
- Can the student move the cursor on the computer screen using a mouse?
    - Can the student control the click function of the mouse?
- Can the student control the cursor on the screen using a trackball?
- Can the student control head movements?
- Is the student's speech easily understood?
- Can the student accurately touch an area that is smaller than the size of a key on the regular keyboard?

Sensory:

- Does the student have normal vision, with or without corrections such as eyeglasses?
- Does the student have normal hearing, with or without corrections such as hearing aids?
- Does the student respond as other students to touching textured surfaces?

Cognitive:

- Does the student understand the concept of cause and effect?
- Does the student have letter and number recognition skills?
- Does the student demonstrate age appropriate memory skills?

Computer Access Assessment Checklist

Name ____________________

Date ____________________

	Y	N	Comments
Motor *Note: The student should be in an optimal, functional position*			
Keyboard Can accurately press a l/2" key, can include using a keyguard			
Can reach all 4 corners of the regular keyboard			
Mouse Can move the cursor on the computer screen using a mouse			
Can control the click function of the mouse			
Trackball/Joystick Can control the cursor on the screen using a trackball			
Can control the cursor on the screen using a joystick			
Expanded Keyboard Can accurately press a 3/4" or larger key or area			
Can reach all four corners of a 10"x20" rectangle			
Mini Keyboard Can accurately touch an area that is smaller than the size of a key on the regular keyboard			
Has difficulty touching all corners of a regular keyboard			
Headpointers Can control head movements			
Voice Input Speech is easily understood			
Switch Has a consistent, reliable movement			
*Checking the yes column indicates that the input device may be an option **Sensory**			
Has normal vision, with or without corrections such as eyeglasses			
Has normal hearing, with or without corrections such as hearing aids			
Responds as others to touching textured surfaces			
Cognition			
Understands cause and effect			
Has letter and number recognition skills			
Demonstrates age-appropriate memory skills			

Context Issues:

Does the student want to use the computer with the input/output device?

What type of computer (Mac, PC) does the student currently have or need to use?

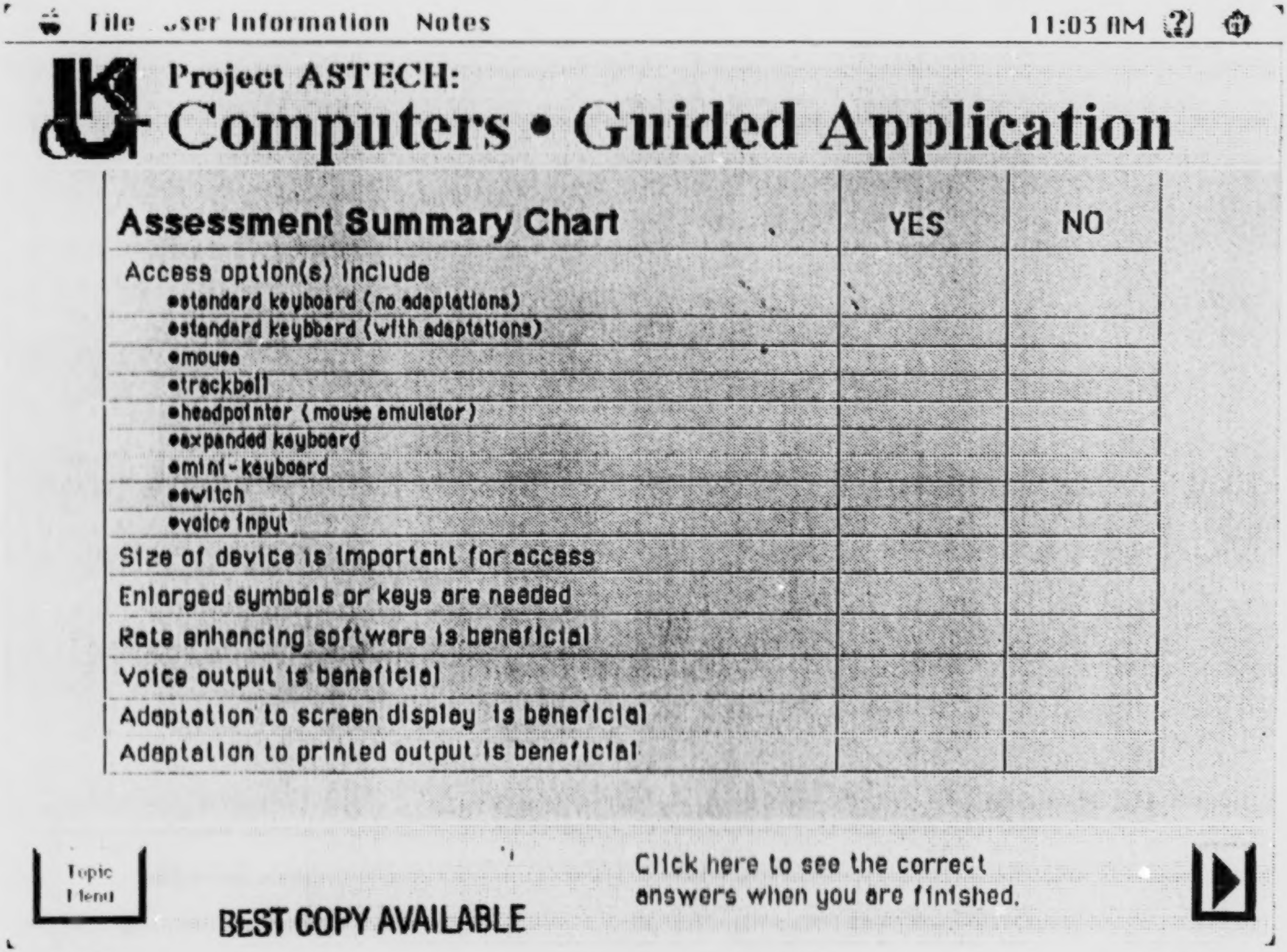
Who is buying the input/output device?

Where will the student use the computer?

Who will train the student to use the input/output device?

Screen printouts from Project ASTECH-Assistive Technology Training Through Multimedia (1996)

7A



Project ASTECH:

Computers • Guided Application

Assessment Summary Chart	YES	NO
Access option(s) include •standard keyboard (no adaptations)		
•standard keyboard (with adaptations)		
•mouse		
•trackball		
•headpointer (mouse emulator)		
•expanded keyboard		
•mini-keyboard		
•switch		
•voice input		
Size of device is important for access		
Enlarged symbols or keys are needed		
Rate enhancing software is beneficial		
Voice output is beneficial		
Adaptation to screen display is beneficial		
Adaptation to printed output is beneficial		

Click here to see the correct answers when you are finished.

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Computer Access Assessment Summary Chart

Name________________ Date ________________

Note: The student should be in an optimal, functional position	Yes	No	Comments
Access option(s) include: standard keyboard (no adaptations)			
standard keyboard (with adaptations)			
mouse			
trackball			
light/head pointer			
expanded keyboard			
mini-keyboard			
switch			
voice input			
Size of device is important for access			
Enlarged symbols or keys are needed			
Rate enhancing software is beneficial			
Voice output is beneficial			
Adaptation to screen display is beneficial			
Adaptation to printed output is beneficial			

Context Issues:

Does the student want to use the computer?

What type of computer does the school currently have?

Who is buying the computer?

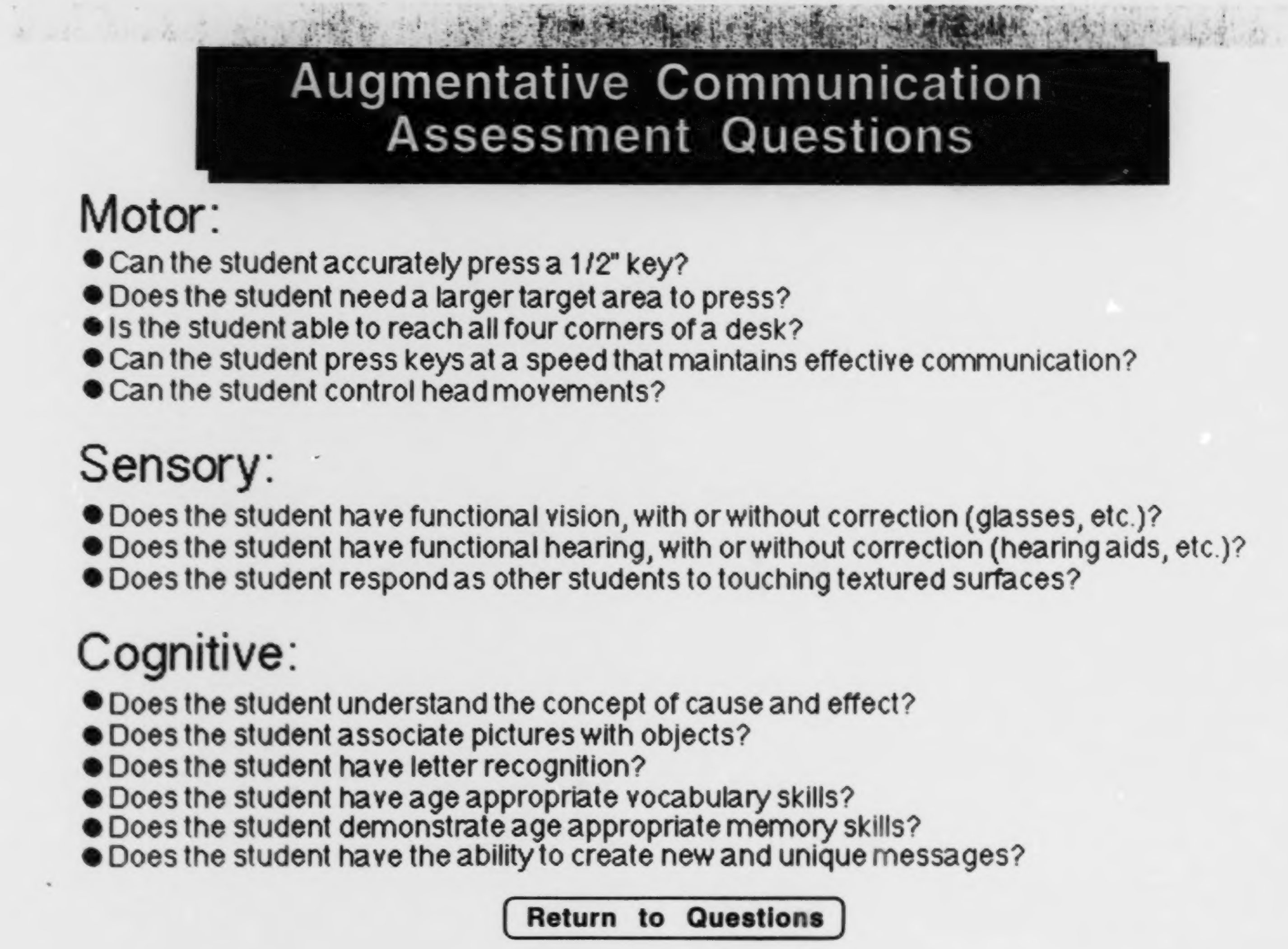
Where will the student use the device?

Does the student need to take the computer from place to place?

Are there any team members who have experience with a specific computer or company?

Who will train the student and others to use the computer?

Screen printouts from Project ASTECH-Assistive Technology Training Through Multimedia (1996)



Augmentative Communication Assessment Questions

Motor:

- Can the student accurately press a 1/2" key?
- Does the student need a larger target area to press?
- Is the student able to reach all four corners of a desk?
- Can the student press keys at a speed that maintains effective communication?
- Can the student control head movements?

Sensory:

- Does the student have functional vision, with or without correction (glasses, etc.)?
- Does the student have functional hearing, with or without correction (hearing aids, etc.)?
- Does the student respond as other students to touching textured surfaces?

Cognitive:

- Does the student understand the concept of cause and effect?
- Does the student associate pictures with objects?
- Does the student have letter recognition?
- Does the student have age appropriate vocabulary skills?
- Does the student demonstrate age appropriate memory skills?
- Does the student have the ability to create new and unique messages?

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Augmentative Communication Assessment Checklist

Name ____________________ Date ____________________

	Yes	No	Comments
Motor *Note: The student should be in an optimal, functional position*			
Can accurately press a 1/2" key			
Needs a larger target area to press			
Able to reach four corners of a student's desk			
Can press keys at a speed that maintains effective communication			
Can control head movements			
Sensory			
Has normal vision, with or without corrections such as eyeglasses			
Has normal hearing, with or without corrections such as hearing aids			
Responds as others to touching textured surfaces			
Cognition			
Understands cause and effect			
Associates pictures with objects			
Has letter recognition			
Has age-appropriate vocabulary skills			
Demonstrates age-appropriate memory skills			
Is able to create new & unique messages			

Context Issues:

Does the student want to use the aug com device?
Who is buying the device?
Where will the student use the device?
How will the student transport the device?
Are there any team members who have experience with any specific aug com device or company?
Who will train the student to use the device?

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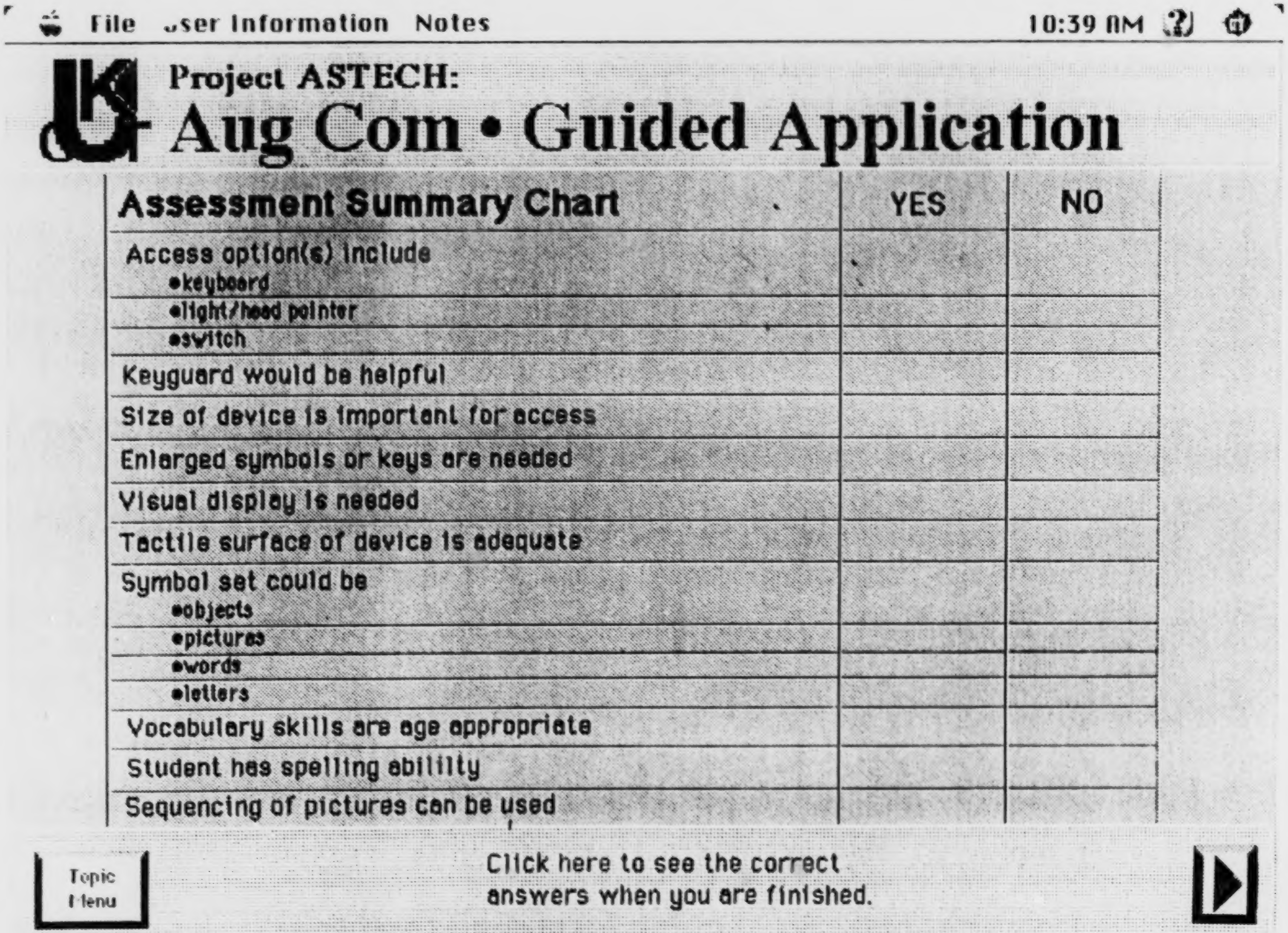
11A



Project ASTECH:

Aug Com • Guided Application

Assessment Summary Chart	YES	NO
Access option(s) include •keyboard		
•light/head pointer		
•switch		
Keyguard would be helpful		
Size of device is important for access		
Enlarged symbols or keys are needed		
Visual display is needed		
Tactile surface of device is adequate		
Symbol set could be •objects		
•pictures		
•words		
•letters		
Vocabulary skills are age appropriate		
Student has spelling ability		
Sequencing of pictures can be used		

Click here to see the correct answers when you are finished.

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Augmentative Communication
Assessment Summary Chart

Name________________ Date ________________

Note: The student should be in an optimal, functional position	Yes	No	Comments
Access option(s) include: keyboard			
light/head pointer			
switch			
Keyguard would be helpful			
Size of device is important for access			
Enlarged symbols or keys are needed			
Visual display is needed			
Tactile surface of device is adequate			
Symbol set could be: objects			
pictures			
words			
letters			
Vocabulary skills are age-appropriate			
Student has spelling ability			
Sequencing of pictures can be used			

Context Issues:

Does the student want to use an aug com device?

Who is buying the device?

Where will the student use the device?

How will the student transport the device?

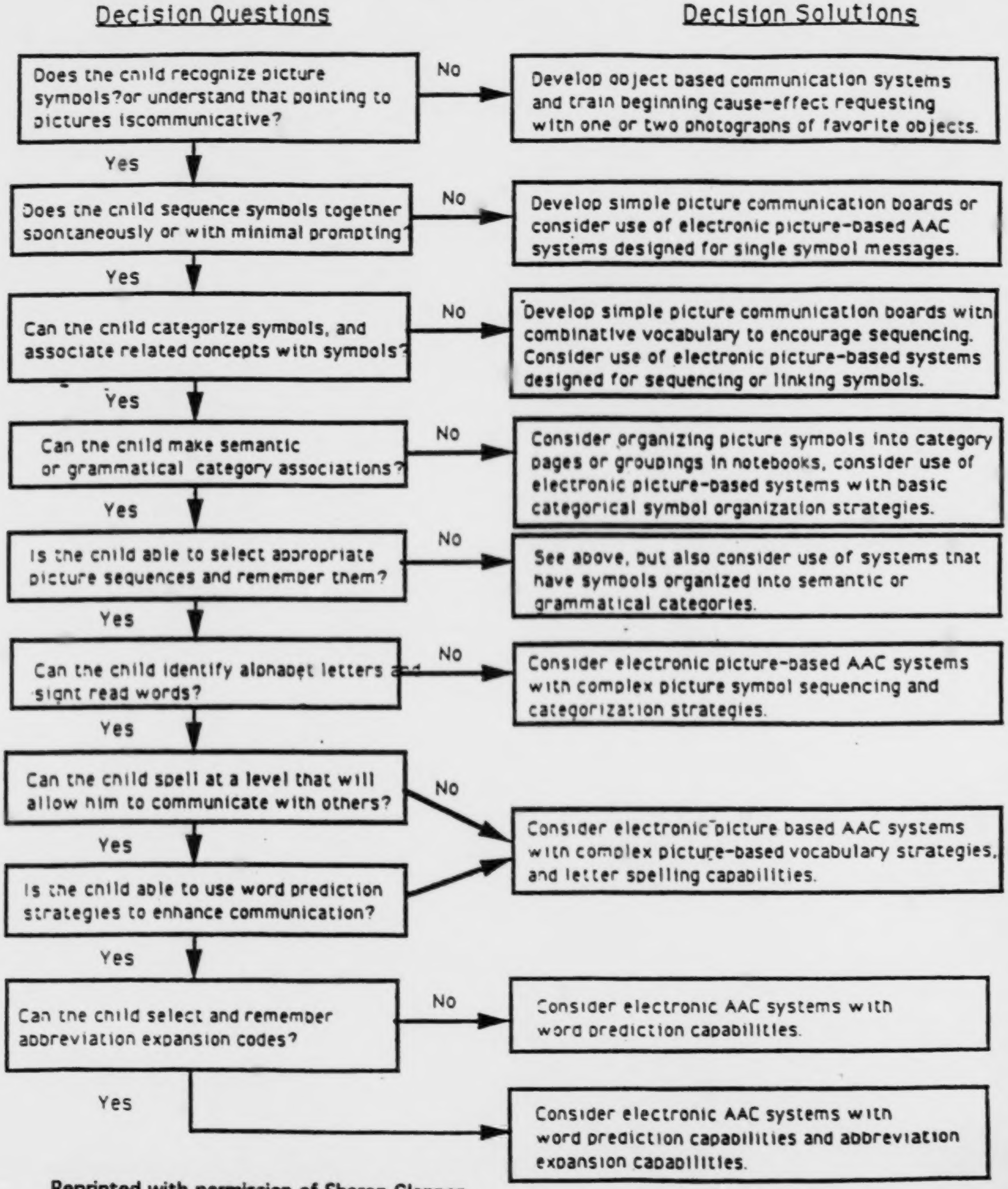
Are there any team members who have experience with any specific aug com device or company?

Who will train the student to use the device?

Augmentative Communication Skills Inventory

Sharon Glennen, Ph.D. (1993)

Augmentative Communication Assessment Decision Chart



Decision Questions

Decision Solutions

Does the child recognize picture symbols? or understand that pointing to pictures is communicative?

Develop object based communication systems and train beginning cause-effect requesting with one or two photographs of favorite objects.

Does the child sequence symbols together spontaneously or with minimal prompting?

Develop simple picture communication boards or consider use of electronic picture-based AAC systems designed for single symbol messages.

Can the child categorize symbols, and associate related concepts with symbols?

Develop simple picture communication boards with combinative vocabulary to encourage sequencing. Consider use of electronic picture-based systems designed for sequencing or linking symbols.

Can the child make semantic or grammatical category associations?

Consider organizing picture symbols into category pages or groupings in notebooks, consider use of electronic picture-based systems with basic categorical symbol organization strategies.

Is the child able to select appropriate picture sequences and remember them?

See above, but also consider use of systems that have symbols organized into semantic or grammatical categories.

Can the child identify alphabet letters and sight read words?

Consider electronic picture-based AAC systems with complex picture symbol sequencing and categorization strategies.

Can the child spell at a level that will allow him to communicate with others?

Is the child able to use word prediction strategies to enhance communication?

Consider electronic picture based AAC systems with complex picture-based vocabulary strategies, and letter spelling capabilities.

Can the child select and remember abbreviation expansion codes?

Consider electronic AAC systems with word prediction capabilities.

Consider electronic AAC systems with word prediction capabilities and abbreviation expansion capabilities.

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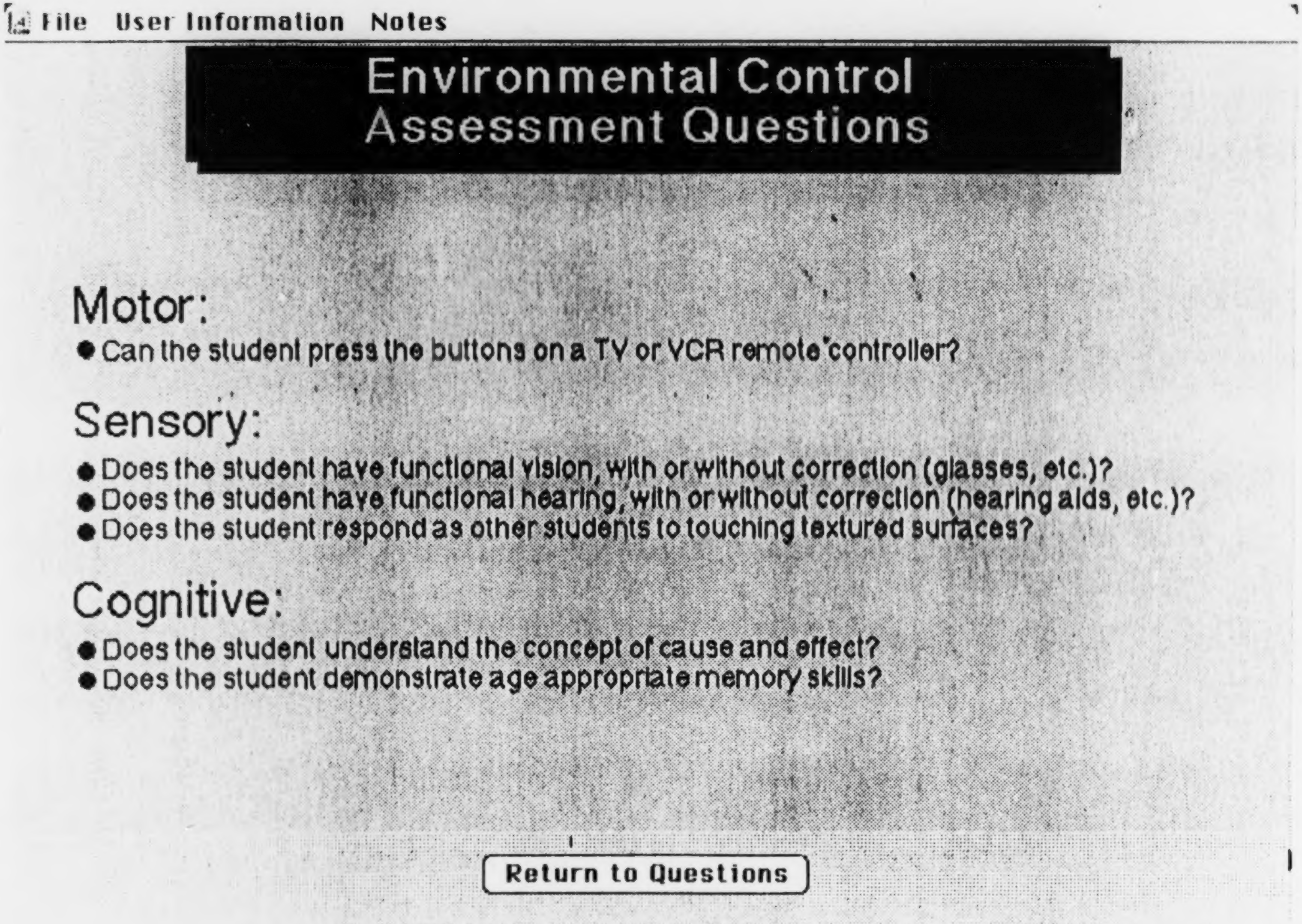
14A



Environmental Control Assessment Questions

Motor:

- Can the student press the buttons on a TV or VCR remote controller?

Sensory:

- Does the student have functional vision, with or without correction (glasses, etc.)?
- Does the student have functional hearing, with or without correction (hearing aids, etc.)?
- Does the student respond as other students to touching textured surfaces?

Cognitive:

- Does the student understand the concept of cause and effect?
- Does the student demonstrate age appropriate memory skills?

Environmental Control Assessment Checklist

Name ____________________ Date ____________________

	Yes	No	Comments
Motor *Note: The student should be in an optimal, functional position*			
Can accurately press the buttons on a TV or VCR remote controller			
Sensory			
Has normal vision, with or without corrections such as eyeglasses			
Has normal hearing, with or without corrections such as hearing aids			
Responds as others to touching textured surfaces			
Cognition			
Understands cause and effect			
Demonstrates age-appropriate memory skills			

Context Issues:

Does the student want to use the device?

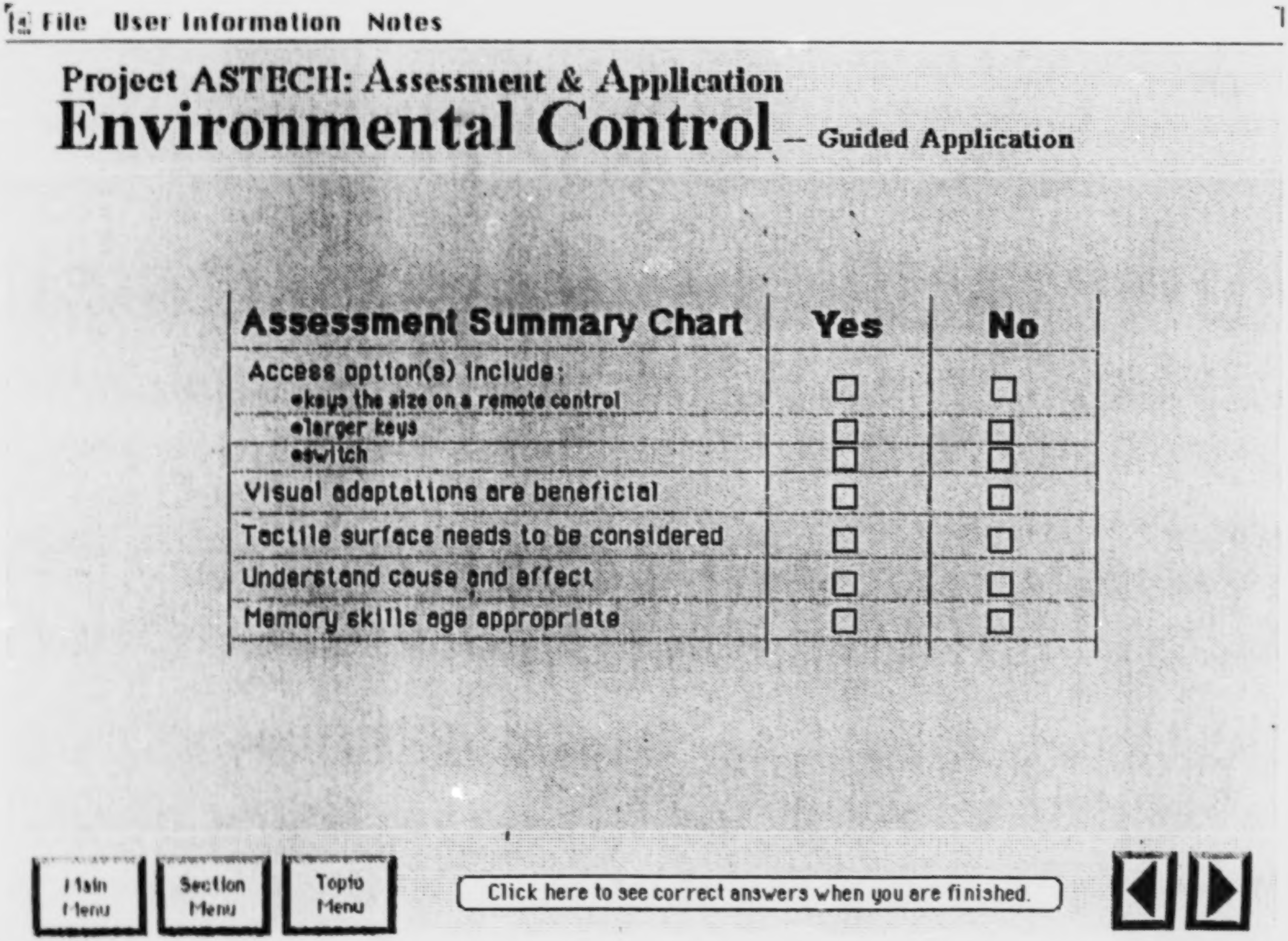
Who is buying the device?

Where will the student use the device?

How will the student transport the device?

Are there any team members who have experience with any specific device or company?

Who will train the student to use the device?


File
User Information
Notes

Project ASTECH: Assessment & Application

Environmental Control – Guided Application

Assessment Summary Chart	Yes	No
Access option(s) include: •keys the size on a remote control	☐	☐
•larger keys	☐	☐
•switch	☐	☐
Visual adaptations are beneficial	☐	☐
Tactile surface needs to be considered	☐	☐
Understand cause and effect	☐	☐
Memory skills age appropriate	☐	☐

Main Menu
Section Menu
Topic Menu
Click here to see correct answers when you are finished.

Screen printouts from Project ASTECH-Assistive Technology Training Through Multimedia (1996)

16A

Environmental Control Assessment Summary Chart

Name ______________ Date ______________

Note: The student should be in an optimal, functional position

	Yes	No	Comments
Access option(s) include: keys the size on a remote control			
larger keys			
switch			
Visual adaptations are beneficial			
Tactile surface needs to be considered			
Understands cause and effect			
Memory skills are age-appropriate			

Context Issues:

Does the student want to use the device?

Who is buying the device?

Where will the student use the device?

How will the student transport the device?

Are there any team members who have experience with any specific device or company?

Who will train the student and others to use the device?

The Scanning Assessment Tool

by Jennifer Angelo, Ph. D., OTR
© 1994

Supported by grant #H023A20038 under
the Individuals with Disabilities Education Act.

Programmed by William E. DeRoo, M.A., CCC/SLP,
based on a pilot program by Robert J. Beichner, Ed. D.

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Contents

Introduction

What is the Scanning Assessment Tool? 1
Intended Users 1
System Requirements 1
Installation 2

Operation

Overview 3

The Set-Up Screen

Current Client File 5
Number of Boxes 5
Scanning Mode 6

Delay Times

Staring Delay, Scanning Speed 6
Acceptance Time 7
Number of Trials Per Session 7
Name of Switch Being Used 7
Switch Position 7
Edit Comments 7
Begin Session 8

Assessment Menu Commands

File Commands

New Subject File, Open Subject File, Save File As… 8

Test Session Commands

Begin Session 8
Cancel Last Trial, Cancel Current Session 9

Graphing Commands

Graph/Tabulate Data 9
Display Table 11
Display Graph 13
Edit Comments 14
Print 15

Leaving Scanning Assessment Tool

Quit Scanning Assessment 15

Introduction

What is the Scanning Assessment Tool?

The Scanning Assessment Tool program provides scanning accuracy and speed information for single-switch users. This information is collected using three modes: auto, inverse, and step scanning. Data from up to ten sessions may be graphed or tabulated at once. In this way, a client's performance using different scanning modes and/or delay times ("speeds") may be compared, and improvement over time may be demonstrated.

Intended Users

The Scanning Assessment Tool was designed for use by Occupational Therapists, Speech-Language Pathologists, and other assistive technology providers, to help determine the most effective scanning technique for individual clients. This manual assumes basic familiarity with Macintosh™ use. Please refer to the documentation supplied with your Macintosh™ (including the "Macintosh Basics" program) for more information.

System Requirements

The Scanning Assessment Tool requires the following hardware:

- A Macintosh™ computer with 512x342 or greater screen resolution.
- Either HyperCard 2.1 or higher, or HyperCard Player.
- System 7.0 or higher.
- A hard disk drive.
- A Macintosh Switch Interface (Don Johnston Developmental Equipment part number M09), Ke:nx (Don Johnston Developmental Equipment part number M42), or equivalent.
- Switches.

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Installation

Follow these steps to install the Scanning Assessment Tool on your hard drive:

- Turn on your Macintosh™ and open the folder on your hard drive where the Scanning Assessment Tool will be placed.
- Insert the Scanning Assessment Tool disk into the disk drive.
- Double-click on the Scanning Assessment Tool disk icon to open the disk.
- Drag the "Scanning Assessment Tool " and "Scanning Assessment Tool-LS" files to the desired folder on your hard drive.
- Check to be sure you have installed the Don Johnston Macintosh Switch Interface or Ke:nx according to the manufacturer's instructions.
- Refer to the Macintosh Switch Interface or Ke:nx user's manual to connect the desired switch.

-It is important to use the Scanning Assessment Tool on your hard drive, and not on the floppy disk, to ensure accurate scan timing. To conserve hard drive space, the file "Scanning Assessment Tool-LS" may be eliminated on Macs with 512x342-resolution screens (e.g., Mac Classic).

Operation

Overview

The Scanning Assessment Tool consists of a set-up screen, three linear scanning arrays (3, 6, and 9 boxes), and graphing and tabulating utilities. When you run the Scanning Assessment Tool, a title screen is displayed (Figure 1). Click on the "Begin Assessment" button. At this time, the set-up screen is displayed (Figure 2). Specify the desired set-up parameters (number of boxes, scanning mode, delay time, name of switch, and switch position). To begin the first session, click the "Begin Session" button or choose "Begin Session" from the Assessment menu.

At the beginning of each session, the linear scan array is displayed with the scanning mode in the lower right corner (Figure 3). To begin each trial, position the mouse pointer over the "Begin Trial" button. Your client activates his or her switch to begin the trial. This avoids false starts and the client not being ready when the trial begins. After the switch is released, the computer says, "Ready, set, go," and the trial begins.

For each trial scan, after the computer says "Go," it waits for the amount of time you specified as the Starting Delay on the set-up screen. Then, the scan begins. A smiling face is displayed at the target box in the array. The hatch-marked, thick-bordered box is the current position of the scan.

If the client correctly selects the target box, two short beeps are heard. After every third correct selection, the computer provides verbal reinforcement ("Good!" or "Terrific!"). A buzzer sound is heard if the incorrect box is selected, or if no selection is made by the end of one scan through the array. This is the end of the trial.

After each trial is completed, you may cancel the trial or cancel the session if desired (see "Assessment Menu Commands," below). To continue with the next trial, position the mouse over the "Begin Trial" button. The client activates the switch to start the next trial.

After the session is completed or canceled, the program returns to the set-up screen. From there, you can make changes to the set-up (see "The Set-Up Screen," below). You can also graph the data, perform file-management operations, or quit (see "Assessment Menu Commands," below).

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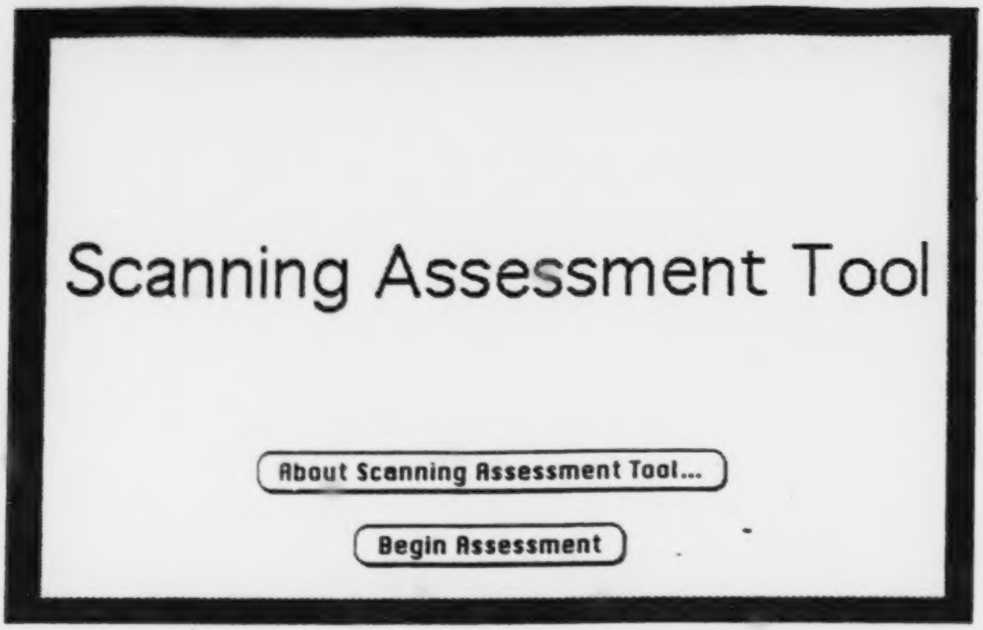
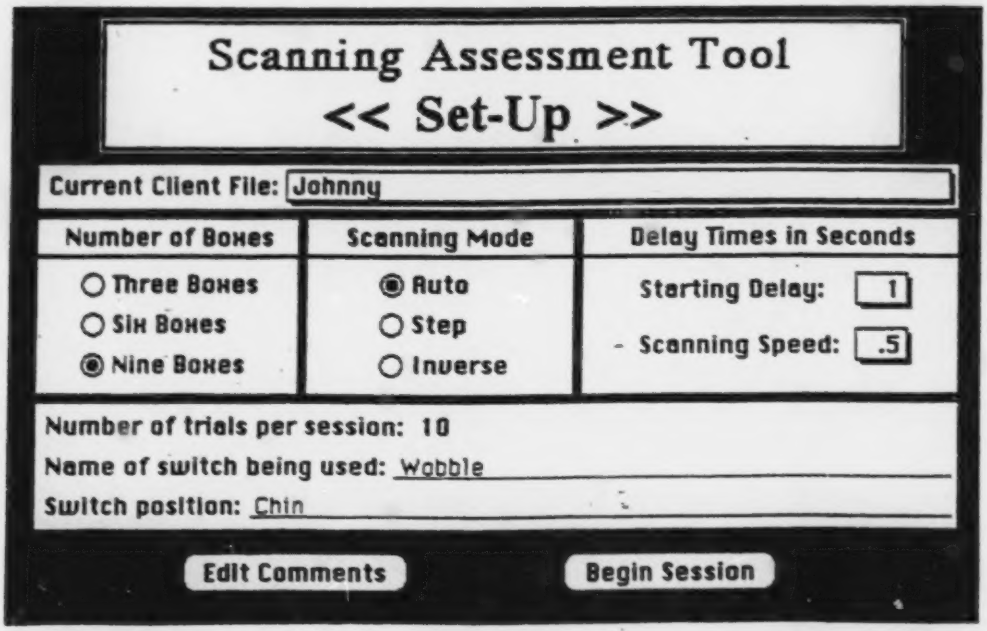

Scanning Assessment Tool
About Scanning Assessment Tool...
Begin Assessment

Figure 1: The title screen.


Scanning Assessment Tool
<< Set-Up >>
Edit Comments
Begin Session

Current Client File: Johnny

Number of Boxes
○ Three Boxes
○ Six Boxes
● Nine Boxes

Scanning Mode
● Auto
○ Step
○ Inverse

Delay Times in Seconds
Starting Delay: 1
Scanning Speed: .5

Number of trials per session: 10
Name of switch being used: Wobble
Switch position: Chin

Figure 2: The set-up screen.

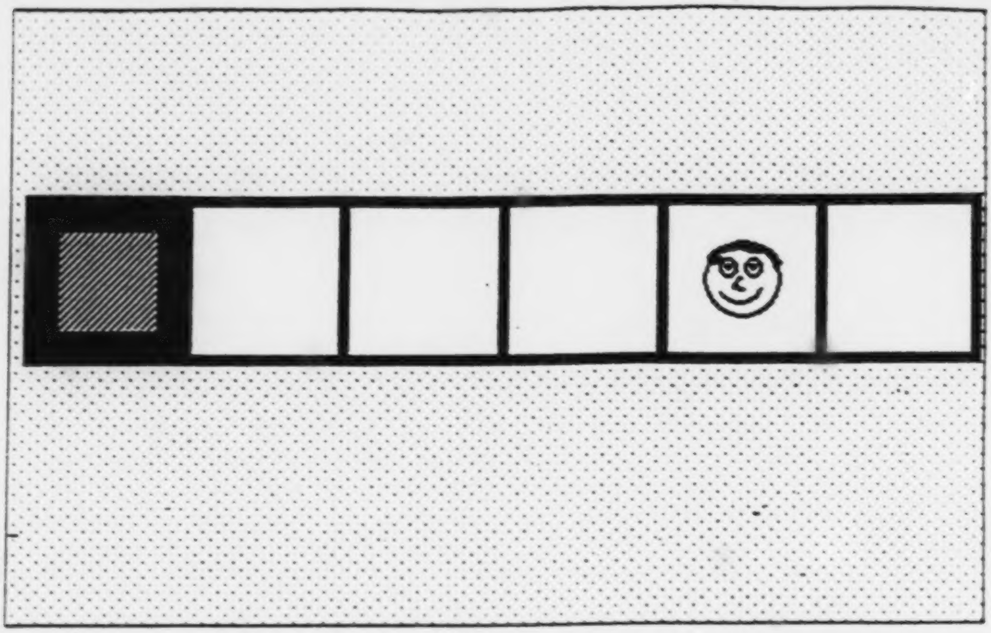


Figure 3: The 6-box scanning array. The 3- and 9-box arrays are similar.

The Set-Up Screen

The main display of the Scanning Assessment Tool is the set-up screen (Figure 2). It is where you specify the parameters of the scan, and the file to which performance data will be saved. The following controls are found on the set-up screen:

Current Client File

The box labeled "Current Client File" shows what client scan data file is open (Figure 2). Only one client file can be open at a time. After each scanning trial, the data for that trial are saved to the client file automatically. To start a new client file, or to open an existing file (to graph old data or append additional data), click on the box labeled "Current Client File." Please refer to "Assessment Menu Commands," below, for details about file commands.

Number of Boxes

The Scanning Assessment Tool provides linear scanning arrays of 3, 6, and 9 boxes in length for client testing. To select the number of boxes for subsequent test sessions, click on the "Three Boxes," "Six Boxes," or "Nine

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Boxes" button (Figure 2). Please note that graphs and tables produced within the Scanning Assessment Tool do not specify the size of the scanning array. You can specify the number of boxes as a comment, however. Please refer to "Edit Comments," below, for more information about comments. Please refer to the "Graph/Tabulate Data" menu command, below, for more information about graphs and tables.

Scanning Mode

The Scanning Assessment Tool provides testing of auto, step, and inverse scan modes. To select the scanning mode for subsequent test sessions, click on the "Auto," "Step," or "Inverse" button (Figure 2). In auto scan mode, the cursor moves along the scanning array until the switch is activated; switch activation makes the selection. In step scan mode, each momentary activation of the switch advances the cursor to the next box; not activating the switch indicates the selection. In inverse scan mode, prolonged activation of the switch moves the cursor along the scanning array; releasing the switch makes the selection. Performance across modes can be compared using graphs and tables. Please refer to the "Graph/Tabulate Data" menu command, below, for more information about graphs and tables.

Delay Times

Auto, step, and inverse scan modes have associated delay times: starting delay, scanning speed, and acceptance time. These are specified on the set-up screen. The values are given in seconds for all three times. Please note that scanning speed appears for auto and inverse scanning, and changes to acceptance time for step scanning.

Starting Delay

For all modes, the starting delay is the amount of time between the display of the target box on the scanning array, and the start of the scan. To change the starting delay, click on the number in the box to the left of the words "Starting Delay" (Figure 2). Type the new starting delay time in the box that appears. Click the "OK" button to keep the new time after you have typed it, or the "Cancel" button to keep the old time.

Scanning Speed

Auto and inverse modes have a delay referred to as "Scanning Speed." This is the length of time the cursor remains at one box in the scanning array, before moving to the next box. (Note that this is not, strictly speaking, a "speed" value.) The scanning speed is displayed on the set-up screen whenever auto or inverse mode is used. To change the scanning speed, click on the number in the box to the left of the words "Scanning Speed" on the set-up screen. Type the new time in the box that appears. Click the "OK" button to keep the new time after you have typed it, or the "Cancel" button to keep the old time.

Acceptance Time

Step mode has a delay referred to as "Acceptance Time." This is the length of time the switch must remain inactivated in order to select a box. The acceptance time is displayed on the set-up screen whenever step mode is used. To change the acceptance time, click on the number in the box to the left of the words "Acceptance Time" (Figure 2). Type the new selecting delay time in the box that appears. Click the "OK" button to keep the new time after you have typed it, or the "Cancel" button to keep the old time. Please note that acceptance time is also called a "speed" on graphs and tables produced by the Scanning Assessment Tool.

Number of trials per session

The Scanning Assessment Tool presents ten trials in each test session. the number is fixed to facilitate comparisons across sessions. For reference, the "Number of trials per session" is displayed on the set-up screen (Figure 2).

Name of switch being used

The blank space labeled "Name of switch being used" (Figure 2) allows you to record the type of switch in use. The switch name will be saved to the client's file and printed with performance graphs and tables. To edit the switch name, click just above the dotted line labeled "Name of switch to be used," then type in the name of the switch.

Switch position

The blank space labeled "Switch position" (Figure 2) allows you to record the position of the switch being used. The switch position will be saved to the client's file and printed with performance graphs and tables. To edit the switch position, click just above the dotted line labeled "Switch position."

Edit Comments

The Scanning Assessment Tool provides for comments to be saved in the client file and printed with graphs and tables. To edit the comments for the current client file, click the "Edit Comments" button (Figure 2). Please refer to the "Edit Comments" menu command, below, for more information and alternative forms of this command.

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Begin Session

To begin a scan test session, you may click the "Begin Session" button (Figure 2). Please refer to the "Begin Session" menu command, below, for more information and alternative forms of this command.

Assessment Menu Commands

All program operations use menu commands. The Assessment menu appears in the menu bar at the top of the screen at all times while the Scanning Assessment Tool runs. The Assessment menu commands are as follows:

File commands

New Subject File...

To begin a new client file, choose "New Client File..." from the Assessment menu. You will be asked to name the new file. The program saves scanning data to the file automatically. You may wish to give each file the name of a client, for convenience in retrieving information later. To choose "New Client File..." using the keyboard, type command-N (hold down the ⌘ key and press N). You can also begin a new client file by clicking the "Current Client File" box on the set-up screen (Figure 2). Please refer to "The Set-Up Screen," above, for more information.

Open Subject File...

To continue to work with an existing client file, choose "Open Client File..." from the Assessment menu. You will be asked which file you want to open. After you open a file, the set-up screen (Figure 2) will reflect the parameters of the last scan saved in that file. You can graph and/or add to the data in the opened file. To choose "Open Client File..." using the keyboard, type command-O (hold down the ⌘ key and press O [not zero]). You can also open an existing client file by clicking the "Current Client File" box on the set-up screen (Figure 2). Please refer to "The Set-Up Screen," above, for more information.

Save File As...

To save a copy of the currently-open client file, and continue working with the copy, choose "Save File As..." from the Assessment menu. You will be asked to name the new file. The "Save File As..." menu command does not have a keyboard equivalent.

Test session commands

Begin Session

To begin a scan test session, choose "Begin Session" from the Assessment menu. At the beginning of each session, the linear scan array is displayed (see Figure 3). To begin each trial, you position the mouse pointer over the "Begin Trial" button. Your client activates his or her switch to begin the trial. The computer says, "Ready, set, go," and the trial begins.

After three successful trials (trials in which the client selected the target box correctly), the program will provide verbal praise by speaking "Good!" or "Terrific!" After an entire session has been completed, the program will provide an audio-visual reward. After that, the program will return you to the set-up menu.

To choose "Begin Session" using the keyboard, type command-B (hold down the ⌘ key and press B). There is no keyboard equivalent for starting the trials within each session. You may also begin a session by clicking the "Begin Session" button on the set-up-screen (see Figure 2).

Cancel Last Trial

After a scanning trial has been completed, the data from that trial can be discarded if you decide the trial was invalid. To discard the data from the previous trial, choose "Cancel Last Trial" from the Assessment menu. To choose "Cancel Last Trial" using the keyboard, type command-T (hold down the ⌘ key and press T).

Cancel Current Session

Between trials or after the last trial during a session, the session may be interrupted. To interrupt a session, choose "Cancel Session" from the Assessment menu. You will be asked to confirm whether you want to interrupt the session. If any trials were completed in this session, you will be asked whether to keep or discard the data from those trials. To choose "Cancel Session" using the keyboard, type command-S (hold down the ⌘ key and press S).

Graphing commands

Graph/Tabulate Data

The data from any Scanning Assessment Tool client file can be graphed or tabulated. Choose "Graph/Tabulate Data" from the Assessment menu. A check mark will appear next to the "Graph/Tabulate Data" menu item. All sessions stored in the current client file will be displayed according to date, switch name, switch position, scanning mode, scanning "speed" (Figure 4). The number of sessions completed on each date with the same parameters (switch name and position, scanning mode and speed), is displayed as well. In this way, one line on the graph or one column in the table will include all sessions completed on the same date with the same parameters.

To graph or tabulate performance from one session (or one group of sessions with the same date and parameters), click on the line describing the session(s). The session(s) you have selected will appear in the lower section

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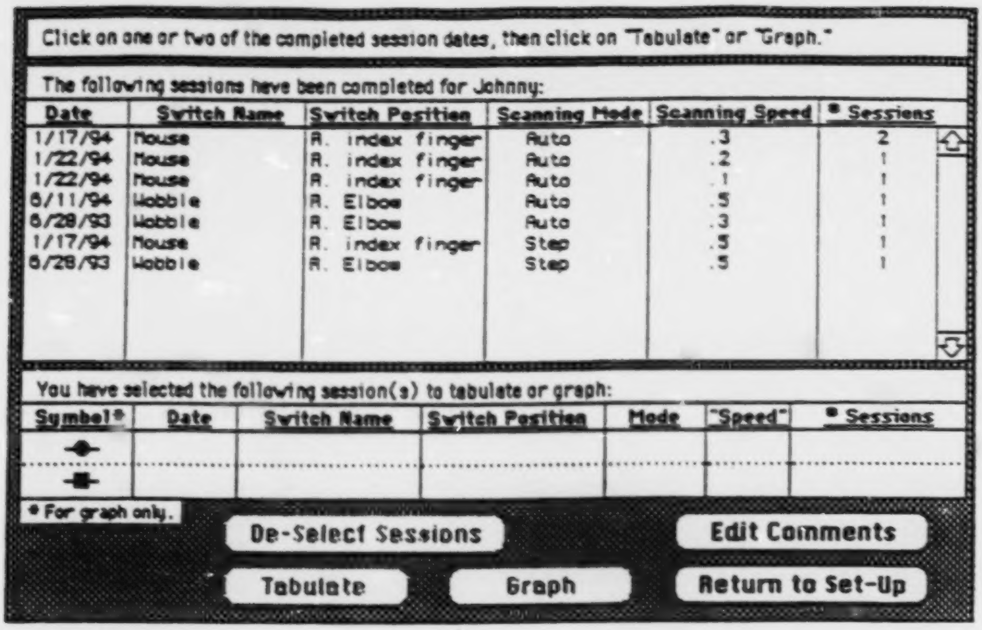


Click on one or two of the completed session dates, then click on "Tabulate" or "Graph."

The following sessions have been completed for Johnny:

Date	Switch Name	Switch Position	Scanning Mode	Scanning Speed	* Sessions
1/17/94	Mouse	R. index finger	Auto	.3	2
1/22/94	Mouse	R. index finger	Auto	.2	1
1/22/94	Mouse	R. index finger	Auto	.1	1
6/11/94	Wobble	R. Elbow	Auto	.5	1
6/28/93	Wobble	R. Elbow	Auto	.3	1
1/17/94	Mouse	R. index finger	Step	.5	1
6/28/93	Wobble	R. Elbow	Step	.5	1

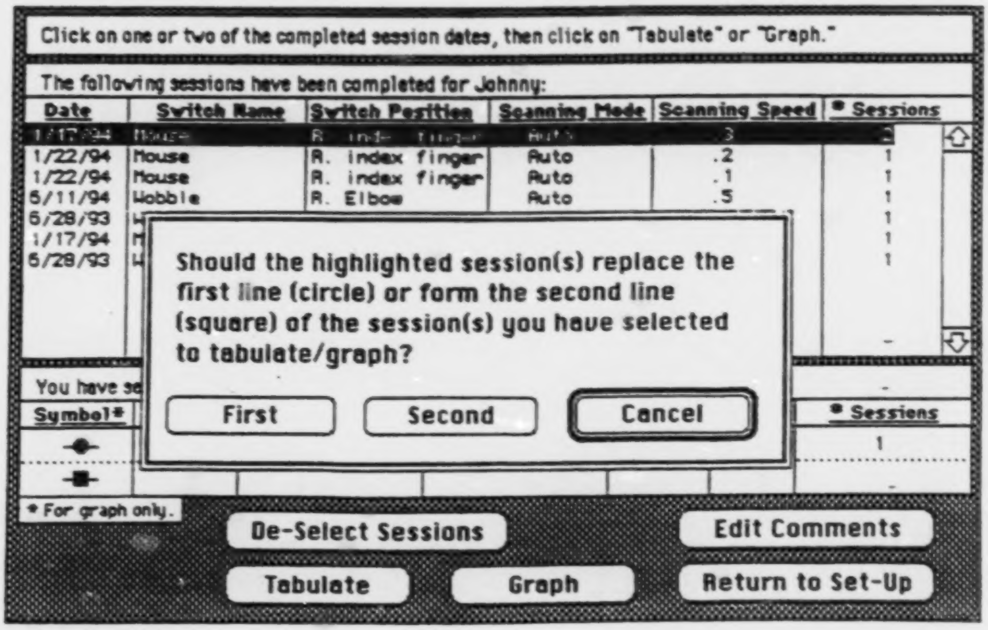
You have selected the following session(s) to tabulate or graph:

Symbol*	Date	Switch Name	Switch Position	Mode	"Speed"	* Sessions
◆						
■						

* For graph only.

De-Select Sessions
Edit Comments
Tabulate
Graph
Return to Set-Up

Figure 4: The session performance data available for tables and graphs.



Click on one or two of the completed session dates, then click on "Tabulate" or "Graph."

The following sessions have been completed for Johnny:

Date	Switch Name	Switch Position	Scanning Mode	Scanning Speed	* Sessions
1/17/94	Mouse	R. index finger	Auto	.3	2
1/22/94	Mouse	R. index finger	Auto	.2	1
1/22/94	Mouse	R. index finger	Auto	.1	1
6/11/94	Wobble	R. Elbow	Auto	.5	1
6/28/93					1
1/17/94					1
6/28/93					1

Should the highlighted session(s) replace the first line (circle) or form the second line (square) of the session(s) you have selected to tabulate/graph?

First
Second
Cancel

You have se

Symbol*						* Sessions
◆						1
■						

* For graph only.

De-Select Sessions
Edit Comments
Tabulate
Graph
Return to Set-Up

Figure 5: Selecting session(s) to be tabulated or graphed.

of the screen, next to the circle symbol. Click the "Tabulate" or "Graph" button to display the table or graph. The table and graph are explained further below.

A single table or graph may contain two sets of performance data. The Scanning Assessment Tool requires that no more than one parameter of the scan (switch name and position, scanning mode and speed) change across two data sets in the same table or graph. To compare performance across two sessions (or two groups of sessions) differing in more than one parameter, create separate tables or graphs for each, according to the procedure described above. Separate tables or graphs also are needed to compare more than two sessions or groups of sessions.

To compare performance across two sessions (or two groups of sessions) that differ in no more than one parameter, click on the line describing the first session(s). The session(s) you have selected will appear in the lower section of the screen, next to the circle symbol, and will become the left-hand column of the table or the circle symbol on the graph. Next, click on the line describing the second session(s). You will be asked whether you want to replace the first selection or to specify a second set of sessions (Figure 5). Click "Second." The session(s) you have selected will appear in the lower section of the screen, next to the square symbol, and will become the right-hand column of the table or the square symbol on the graph. Click the "Tabulate" or "Graph" button to display the table or graph. The table and graph are explained further below.

To replace one session (or group of sessions) with another, click on the line describing the new session(s), on the upper portion of the screen (Figure 4). You will be asked whether you want the new session(s) to form the first or the second part of the table or graph. To remove a session (or group of sessions) from the table or graph without replacing, click the "De-Select Sessions" button (Figure 4).

The Scanning Assessment Tool provides for comments to be saved in the client file and printed with graphs and tables. Please refer the "Edit Comments" menu command, above, for information about editing comments.

To return to the set-up screen (without tabulating or graphing), click the "Return to Set-Up" button (Figure 4), or choose "Graph/Tabulate Data" from the Assessment menu. To choose "Graph/Tabulate Data" using the keyboard, type command-G (hold down the ⌘ key and press G).

Display Table

To display a table of performance for the session(s) you selected, choose "Display Table" from the Assessment menu, or click the "Tabulate" button. A check mark will appear next to the "Display Table" menu item, and the table will be displayed (Figure 6). Each entry in the table consists of the number of correct trials in the session, followed by the number of each

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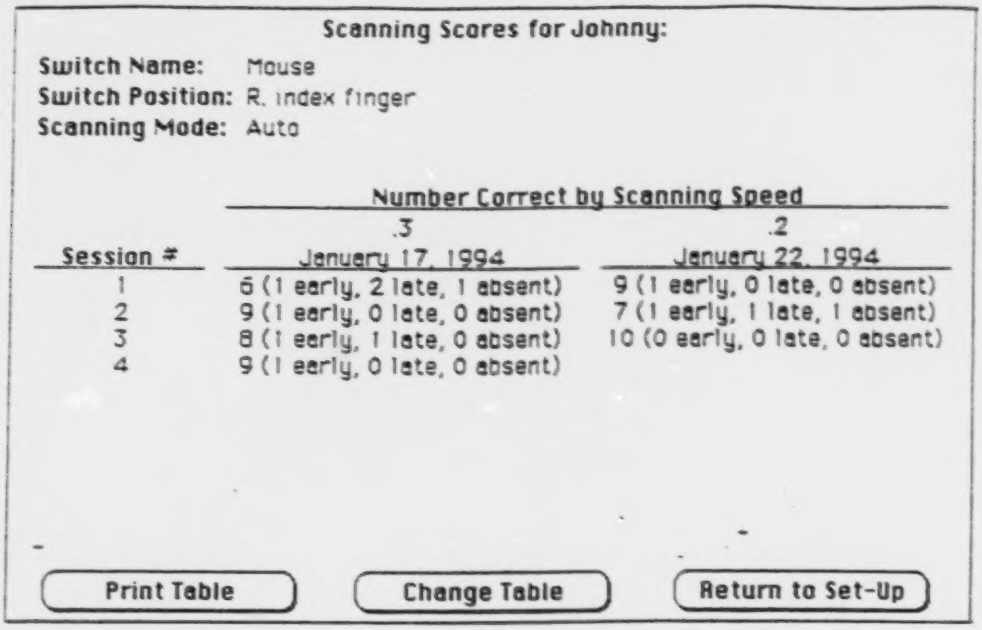


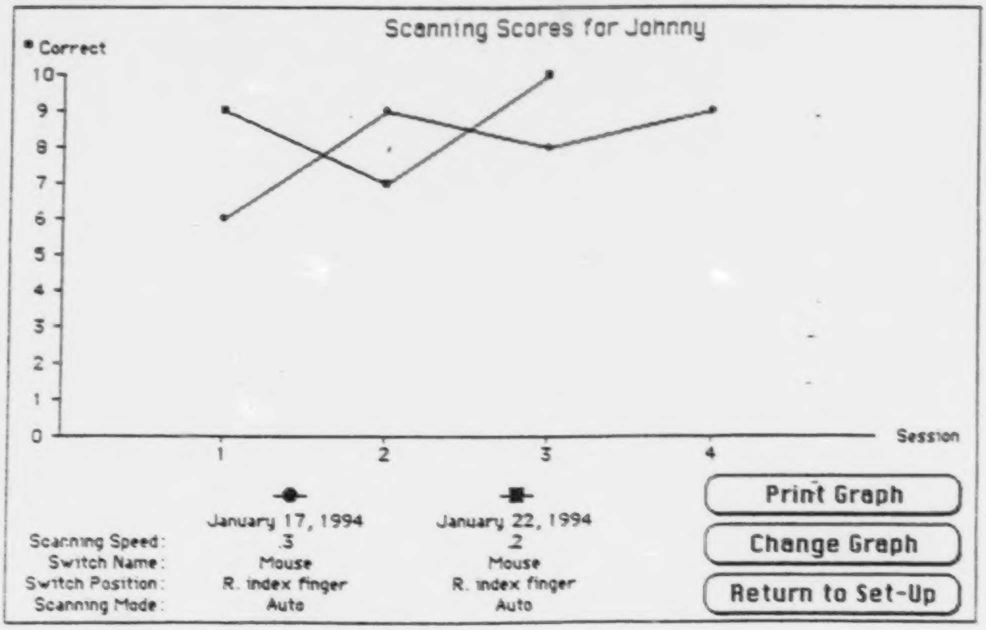
Scanning Scores for Johnny:

Switch Name: Mouse
Switch Position: R. index finger
Scanning Mode: Auto

	Number Correct by Scanning Speed	
	.3	.2
Session #	January 17, 1994	January 22, 1994
1	6 (1 early, 2 late, 1 absent)	9 (1 early, 0 late, 0 absent)
2	9 (1 early, 0 late, 0 absent)	7 (1 early, 1 late, 1 absent)
3	8 (1 early, 1 late, 0 absent)	10 (0 early, 0 late, 0 absent)
4	9 (1 early, 0 late, 0 absent)	

Print Table
Change Table
Return to Set-Up

Figure 6: Sample table.



Scanning Scores for Johnny
# Correct
10
9
8
7
6
5
4
3
2
1
0
Session
1
2
3
4
Print Graph
Change Graph
Return to Set-Up

	●	■
	January 17, 1994	January 22, 1994
Scanning Speed:	.3	.2
Switch Name:	Mouse	Mouse
Switch Position:	R. index finger	R. index finger
Scanning Mode:	Auto	Auto

Figure 7: Sample graph.

type of error made during the session. Three types of activation errors are possible: early (switch activation before the target is reached), late (switch activation after the target is passed), and absent (no switch activation during the entire scan). These results are provided only in tables and not on graphs.

To print the table, click the "Print Table" button or choose "Print" from the Assessment menu. Please refer to the "Print" menu command, below, for more information and alternative forms of this command.

To edit the comments, choose "Edit Comments" from the Assessment menu. Please refer to the "Edit Comments" menu command, below, for more information and alternative forms of this command.

To select other data for display in the table, click the "Change Table" button or choose "Display Table" from the Assessment menu. The previous screen of completed and selected sessions will be displayed (Figure 5). Please refer to the "Graph/Tabulate Data" menu command, above, for more information about selecting sessions to be tabulated and graphed.

To graph the data displayed in the table, choose "Display Graph" from the Assessment menu. Please refer to the "Display Graph" menu command, below, for more information about this command.

To return to the set-up screen, click the "Return to Set-Up" button (Figure 6), or choose "Graph/Tabulate Data" from the Assessment menu. To choose "Graph/Tabulate Data" using the keyboard, type command-G (hold down the ⌘ key and press G).

Display Graph

To display a graph of performance for the session(s) you selected, choose "Display Graph" from the Assessment menu, or click the "Graph" button. A check mark will appear next to the "Display Graph" menu item, and the graph will be displayed (Figure 7).

To print the graph, click the "Print Graph" button or choose "Print" from the Assessment menu. Please refer to the "Print" menu command, below, for more information and alternative forms of this command.

To edit the comments, choose "Edit Comments" from the Assessment menu. Please refer to the "Edit Comments" menu command, below, for more information and alternative forms of this command.

To select other data for display on the graph, click the "Change Graph" button or choose "Display Graph" from the Assessment menu. The previous screen of completed and selected sessions will be displayed (Figure 5). Please refer to the "Graph/Tabulate Data" menu command, above, for more information about selecting sessions to be tabulated and graphed.

To tabulate the data displayed on the graph, choose "Display Table" from the Assessment menu. Please refer to the "Display Table" menu command, above, for more information about this command.

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Some screens provide an "Edit Comments" button. (Refer for example to the set-up screen). Clicking on this button is identical to choosing "Edit Comments" from the Assessment menu.

To continue using the program when you have finished editing, click the "Done Editing" button, or choose "Edit Comments" from the Assessment menu. To choose "Edit Comments" using the keyboard, type command-E (hold down the ⌘ key and press E).

Print

To print a table or graph, choose "Print" from the Assessment menu. To choose "Print" using the keyboard, type command-P (hold down the ⌘ key and press P). You can also print by clicking the "Print Table" or "Print Graph" button (see Figures 6 and 7).

During printing, you will be asked whether you want to print your comments along with the table or graph. Please refer the "Edit Comments" menu command, above, for information about editing comments.

Leaving the Scanning Assessment Tool

Quit Scanning Assessment

To leave the Scanning Assessment Tool, choose the "Quit Scanning Assessment" command from the Assessment menu. To choose "Quit Scanning Assessment" using the keyboard, type command-Q (hold down the ⌘ key and press Q).

GENERAL INFORMATION

While developing the Project ASTECH software and the Resource Guide, we uncovered many resources that may help you. We have compiled lists of these resources, which include selected companies that supply assistive technology devices and solutions, selected organizations and centers that support the users of assistive technology, and places where additional information on assistive technology can be found. We have also included information sheets provided free of charge from the National Information Center for Children and Youth with Handicaps (NICHCY), which describe disabilities commonly experienced by students. The information may be helpful for team members as well as families. NICHCY also functions as a national clearinghouse that provides information and referral sources to both parents of children with disabilities and the professionals who serve those children and families. For more information about NICHCY and its publications list, write

NICHCY
PO. Box 1492
Washington, DC. 20013
(703) 522-3332

Contents

Resource Lists

- Assistive Technology Companies 1GI - 4GI
- Organizations 5GI
- State Technical Assistance Projects (TAP) 6GI - 11GI
- Alliance for Technology Access (ATA) centers 12GI - 14GI
- Selected Books and Resources 15GI - 21GI
- World Wide Web Sites 22GI
- ADL Catalogs 23GI

Fact Sheets on Common Disabilities 24GI - 71GI

Selected Companies

AbleNet
1081 10th Avenue S.E.
Minneapolis, MN 55414
800-322-0956
612-379-0956

Academic Software, Inc.
331 W. 2nd St.
Lexington, KY 40507
606-233-2332

ACS Technologies
202 Rosemount Drive
Pittsburgh, PA 15108
800-227-29022

ADAMLAB
(formerly Wayne County School District)
33500 Van Born Rd.
Wayne, MI 48184
313-467-1415

Adaptivation
224 S.E. 16th St.
Ames, IA 50010
515-233-9086

Affinity Micro Systems, Ltd.
1900 Folsom St. Ste. 205
Boulder, CO 80302-5723
800-367-6771

Apple Computers, Inc.
World Wide Disabilities Solution Group
One Infinite Loop, MS 38-DS
Cupertino, CA 95014
800-600-7808

Arkenston, Inc.
5055 Oakmead Pkwy.
Sunnyvale, CA 94086
800-444-4443
408-247-5900

Articulate Systems, Inc.
600 W. Cummings Pk., Ste. 4500
Woburn, MA 01801
800-443-7077
617-935-5656

Aurora Systems Inc.
2647 Kingsway
Vancouver, B.C. V5R-5H4
Canada
800-361-8255
604-436-2694

Automated Voice Systems Inc.
17059 El Cajon Ave.
Yorba Linda, CA 92686
714-524-4488

Berkeley Access
2095 Rose St.
Berkeley, CA 94709

Blazie Engineering
105 E. Jarrettsville Rd.
Forest Hill, MD 21050
410-893-9333

CE Software Inc.
P.O. Box 65580
West Des Moines, IA 50265
515-221-1801

Selected Companies

Consultants for Communication Technology
508 Bellevue Terrace
Pittsburgh, PA 15202
412-761-6062

Crestwood Co.
6625 N. Sidney Place
Milwaukee, WI 53209-3259
414-352-5678

Dragon Systems, Inc.
320 Nevada St.
Newton, MA 02160
617-965-5200

Detroit Institute for Children
5447 Woodward Ave.
Detroit, MI 48202
313-832-1100

Don Johnston Incorporation
P.O. Box 639
1000 N. Rand Rd., Building 115
Wauconda, IL 60084
800-999-4660
847-526-2682

Dumamis, Inc.
3423 Fowler Blvd.
Lawrenceville, GA 30244
800-828-2443
770-279-1144

Echo Speech Corp.
6460 Via Real
Carpinteria, CA 93013
805-684-4593

Edmark Corporation
P.O. Box 97021
Redmond, WA 98073-9721
800-426-0856
206-556-8430

E.V.A.S.
P.O. Box 371
Westerly, RI 02891
800-872-3827

First Byte, Inc.
Clauset Center
3100 S. Harbor Blvd., Ste. 150
Santa Anna, CA 92704
310-793-0610

IBM Special Needs Systems
P.O. Box 1328, Internal Zip 5432
Boca Raton, FL 33432
800-426-4832

In Touch Systems
11 Westveiw Rd.
Spring Valley, NY 10977
914-354-7431

Infogrip, Inc.
1141 E. Main St.
Ventura, CA 93001
805-652-0770
800-397-0921

Innocomp
26210 Emery Rd., Ste. 302
Warrensville Heights, OH 44128
800-382-8622
216-464-3636

Selected Companies

Institute of Applied Technology
850 Boylston St., Ste. 106
Chestnut Hill, MA 02167
617-731-6466

IntelliTools, Inc.
55 Leveroni Ct., Ste. 9
Novato, CA 94949
800-899-6687
415-382-5959

LC Technologies/Eyegaze Systems
9455 Silver King Ct.
Fairfax, VA 22031
800-733-5284
703-385-7133

LINGRAPHICARE America
(formerly Tolfa Corp.)
3600 W. Bayshore Rd., Ste. 202
Palo Alto, CA 94303
415-390-9566

Luminaud
8688 Tyler Blvd.
Mentor, OH 44060
216-255-9082

Madenta Communications, Inc.
9411 A-20 Ave.
Edmonton, AB T6N 1E5
Canada
403-450-8926
800-661-8406

Mayer-Johnson Co.
P.O. Box 1579
Solana Beach, CA 92075
619-550-0084

Microsoft Corp.
One Microsoft Way
Redmond, WA 98052
2066-882-8080

Microsystems Software Inc.
600 Worcester Rd.
Framingham, MA 01701
800-828-2600
508-879-9000

Phonic Ear, Inc.
3880 Cypress Dr.
Petaluma, CA 94954
800-227-0735
707-769-1110

Prentke-Romich Co.
1022 Heyl Road
Wooster, OH 44691
800-262-1984

Productivity Software International,
211 E. 43rd St., 2202
New York, NY 10017-4707
212-818-1144

R. J. Cooper and Associates
24843 Del Prado, Ste. 283
Dana Point, CA 92629
800-RJ-COOPER
714-240-4853

Sentient System Technology
2100 Wharton St.. Ste. 630
Pittsburgh, PA 15203
412-381-4883

Shea Products, Inc.
1721 Hamilton Rd.
Rochester Hills, MI 48309
810-852-4940

Selected Companies

TASH, Inc.
Unit 1, 91 Station St.
Ajax, ON L1S 3H2
Canada
800-463-5685

Texas Instruments
Accessory Dept. P.O. Box 53
Lubbock, TX 79408
800-842-2737

TIGER Communication Systems
328 Main St. E., Ste. 514
Rochester, NY 14604
800-724-7301
716-454-5134

Western Psychological Services
12031 Wilshire Blvd.
Los Angles, CA 90025-1251
310-478-2061

WesTest Engineering Corp.
1470 N. Main St.
Bountiful, UT 84010
801-298-7100

Words +, Inc.
40015 Sierra Hwy., Building B-145
Palmdale, CA 93550
800-869-8521

World Communications
245 Tonopah Dr.
Fremont, CA 94539
510-656-0911

X-10 (USA), Inc.
91 Ruckman Rd., Box 420
Closter, NJ 07624-0420
201-784-9700
Fax 201-784-9464

Zygo Industries, Inc.
P.O. Box 1008
Portland, OR 97207-1008
503-684-6006
800-234-6006

Selected Organizations

Apple Computers, Inc.
World Wide Disabilities Solution Group
One Infinite Loop, MS 38-DS
Cupertino, CA 95014
800-600-7808

American Occupational Therapy Association (AOTA)
P.O. Box 31220
4720 Montgomery Ln.
Bethesda, MD 20824-1220
301-652-2682

American Physical Therapy Association (APTA)
1111 N. Fairfax St.,
ALexandria, VA 22314-1488
800-999-2782
703-684-2782

American Speech-Language-Hearing Association (ASHA)
10801 Rockville Pike,
Rockville, MD 20852
800-638-8255
301-897-5700

Closing the Gap, Inc.
P.O. Box 68
Henderson, MN 56044
507-248-3294

Council for Exceptional Children (CEC)
1920 Association Dr.,
Reston, VA 22091-1589
800-CEC-Read
703-620-3660

IBM Independence Series Information Center
P.O. Box 1328, Internal Zip 5432
Boca Raton, FL 33432
800-426-4832

International Society for Augmentative & Alternative Communication (ISACC)
P.O. Box 1762, Sta. R,
Toronto, ON Canada M4G 4A3
905-737-9308

National Information Center for Children & Youth with Disabilities (NICHCY)
P.O. Box 1492
Washington, D.C. 20013
800-695-0285

National Parent Network on Disabilities (NPND)
1727 King St., Ste. 305
Alexandria, VA 22314-2836
703-684-6763

RESNA
1700 N. Moore St., Ste. 1540
Arlington, VA 222099-1903
703-524-6686

Trace Research & Development Center
Rm. S-151 Waisman Ctr.,
1500 Highland Ave.
University of Wisconsin
Madison, WI 53705-2280
608-262-6966

Unitied Cerebral Palsy Association, Inc. (UCPA)
1660 L St. N.W., Ste. 700
Washington, D.C. 20036
800-872-5827
202-776-0406

RESNA

RESNA Technical Assistance Project
Suite 1540, 1700 N. Moore Street, Arlington, VA 22209-1903
703/524-6686, Fax: 703/524-6630, TTY: 703/524-6639

NATIONAL INSTITUTE ON DISABILITY AND REHABILITATION RESEARCH
States Funded Under The
Technology-Related Assistance For Individuals With Disabilities Act of 1988 (and Amendments of 1994)

ALABAMA STATEWIDE TECHNOLOGY ACCESS AND RESPONSE PROJECT (STAR) SYSTEM FOR ALABAMIANS WITH DISABILITIES (1993)
2125 East South Boulevard
P.O. Box 20752
Montgomery, AL 36120-0752
Project Director: Tom Gannaway, (334) 613-3480
FAX: (334) 613-3485

ASSISTIVE TECHNOLOGIES OF ALASKA (1990)
701 E. Tudor Road
Suite 280
Anchorage, AK 99503-7445
Information and Referral: Rose Foster,(800) 770-0138 (V/TDD)
Program Director: Kathe Matrone, (907) 562-5609 (V/TDD)
FAX: (907) 563-0146
INTERNET: akatoa@gteens.com

AMERICAN SAMOA ASSISTIVE TECHNOLOGY PROJECT (1993)
Division of Vocational Rehabilitation
Department of Human Resources
Pago Pago, American Samoa 96799
Director: Edmund Pereira, (684) 633-1805/2336
TDD: (684) 233-7874
FAX: (684) 633-1851

ARIZONA TECHNOLOGY ACCESS PROGRAM (AZTAP) (1994)
2600 N. Wyatt Drive, 2nd Floor
Tucson, AZ 85712
Program Director: M.J. Demetras, Ph.D., (520) 324-3170
TDD: (520) 324-3177
FAX: (520) 324-3176
INTERNET: demetras@ccit.arizona.edu

ARKANSAS INCREASING CAPABILITIES ACCESS NETWORK (1989)
2201 Brookwood, Suite 117
Little Rock, AR 72202
Project Director: Sue Gaskin, (501) 666-8868 (V/TDD)
TOLL FREE INSTATE ONLY: (800) 828-2799 (V/TDD)
FAX: (501)-666-5319

CALIFORNIA ASSISTIVE TECHNOLOGY SYSTEM (1993)
CA Department of Rehabilitation
830 K Street
Sacramento, CA 95814
Project Coordinator: Sheila Conlon Mentkowski
PHONE: (916) 324-3062 (Voice/TDD)
FAX: (916) 323-0914
INTERNET: dorca_smentkow@hw1.cahwnet.gov

COLORADO ASSISTIVE TECHNOLOGY PROJECT (1989)
Rocky Mountain Resource and Training Institute
6355 Ward Road, Suite 310
Arvada, CO 80004
Project Director: Bill West, (303) 420-2942 (V/TDD)
FAX: (303) 420-8675
INTERNET: rmrti@essex.hsc.colorado.edu
(moving August 1995).

CONNECTICUT ASSISTIVE TECHNOLOGY PROJECT (1992)
Bureau of Rehabilitation Services
10 Griffin Road North
Windsor, CT 06095
Project Director: John M. Ficarro, (203) 298-2042
TDD: (203) 298-2018
FAX: (203) 298-9590

DELAWARE ASSISTIVE TECHNOLOGY INITIATIVE (1991)
University of Delaware/A.I. dupont Institute
1600 Rockland Road, Room 154
Wilmington, DE 19899
Project Director: Beth Mineo, Ph.D., (302) 651-6790
TDD: (302) 651-6794
FAX: (302) 651-6793
INTERNET: dati@asel.udel.edu

D.C. PARTNERSHIP FOR ASSISTIVE TECHNOLOGY (1993)
801 Pennsylvania Avenue, S.E.
Suite 210
Washington, DC 20003
Project Director: Jody Wildy, (202) 546-9164
TDD: (202) 546-9168
FAX: (202) 546-9169

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FLORIDA ALLIANCE FOR ASSISTIVE SERVICE AND TECHNOLOGY (1992)
2002 Old St. Augustine Road
Building A
Tallahassee, FL 32399-0696
Acting Project Manager: Nancy Fulton
PHONE/TDD: (904) 487-3278
FAX: (904) 488-8062

GEORGIA TOOLS FOR LIFE (1991)
Division of Rehabilitation Services
#2 Peachtree Street NW, Suite 23-411
Atlanta, GA 30303
Information and Referral: Tom Owen, (800) 726-9119
or (404) 894-4960
Project Director: Joy Kniskern, (404) 657-3084
TDD: (404) 657-3085
FAX: (404) 657-3086

GUAM SYSTEM FOR ASSISTIVE TECHNOLOGY (1994)
University Affiliated Program - Developmental Disabilities
House #12 Dean's Circle
University of Guam
UOG Station
Mangilao, Guam 96923
Director: Steve Spencer
PHONE: (671) 734-9309
FAX: (671) 734-5709
INTERNET: sspencer@uog.edu

HAWAII ASSISTIVE TECHNOLOGY TRAINING AND SERVICE PROJECT (1991)
677 Ala Moana Boulevard, Suite 403
Honolulu, HI 96813
Project Director: Barbara Fischlowitz-Leong
PHONE/TDD: (808) 532-7110
FAX: (808) 532-7120

IDAHO ASSISTIVE TECHNOLOGY PROJECT (1992)
129 W. Third Street
Moscow, ID 83843
Information and Referral: Lynn Anderson, (208) 885-3630
Project Director: Bryce Fifield, Ph.D.
PHONE/TDD: (208) 885-3621
FAX: (208) 885-3628

ILLINOIS ASSISTIVE TECHNOLOGY PROJECT (1989)
110 Iles Park Place
Springfield, IL 62718
Information and Referral: Cathy Cates, (800) 852-5110
(In State Only/Voice/TTY) or
(217) 522-7985 (Voice/TTY)
Project Director: Wilhelmina Gunther, (217) 522-7985
FAX: (217) 522-8067
INTERNET: ilatp@gteens.com

INDIANA ATTAIN (ACCESSING TECHNOLOGY THROUGH AWARENESS IN INDIANA) PROJECT (1990)
P.O. Box 7083
402 W. Washington Street, Room W453
Indianapolis, IN 46207-7083
Information and Referral: Judy Hensley, (317) 232-1410 (V/TDD)
Project Director: Cris Fulford, (800) 545-7763 (V/TDD)
FAX: (317) 232-6478

IOWA PROGRAM FOR ASSISTIVE TECHNOLOGY (1990)
Iowa University Affiliated Program
University Hospital School
Iowa City, IA 52242-1011
Information and Referral: Amy Hanna/Dawn Story
PHONE/TDD: (800) 331-3027
Project Director: James Hardy, Ph.D., (319) 353-6386
FAX: (319) 356-8284
INTERNET: james-hardy@uiowa.edu

ASSISTIVE TECHNOLOGY FOR KANSANS PROJECT (1993)
2601 Gabriel
P.O. Box 738
Parsons, KS 67357
Project Director: Dr. Charles Spellman
PHONE: (316) 421-8367
FAX/TDD: (316) 421-0954

KENTUCKY ASSISTIVE TECHNOLOGY SERVICES NETWORK (1989)
P.O. Box 757
Frankfort, KY 40602-0757
Information and Referral: Jerry Wheatley
Project Director: J. Chase Forrester
PHONE/TDD: (502) 573-4665
TOLL FREE INSTATE ONLY: (800) 327-5287 (V/TDD)
FAX: (502) 573-3976

LOUISIANA ASSISTIVE TECHNOLOGY ACCESS NETWORK (1991)
P.O. Box 14115
Baton Rouge, LA 70898
Project Administrator: Julie Nesbit, (504) 922-9152 (Voice/TDD)
FAX: (504) 922-9114
INTERNET: jmnesbit@aol.com

MAINE CONSUMER INFORMATION AND TECHNOLOGY TRAINING EXCHANGE (MAINE CITE) (1989)
Maine CITE Coordinating Center
Education Network of Maine
46 University Drive
Augusta, ME 04330
Project Director: Kathy Powers, (207) 621-3195 (V/TDD)
FAX: (207) 621-3193
SPECIALNET: mecite@gteens.com

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MARYLAND TECHNOLOGY ASSISTANCE PROGRAM (1989)

Governor's Office for Individuals with Disabilities
300 W. Lexington Street, Box 10
Baltimore, MD 21201
Information and Referral: James Corey, (800) TECH-TAP
Project Director: Mary Brady, (410) 333-4975 (Voice/TDD)
FAX: (410) 333-6674
INTERNET: mbrady@epfl1.epflbalto.org

MASSACHUSETTS ASSISTIVE TECHNOLOGY PARTNERSHIP (1990)

MATP Center
Children's Hospital
1295 Boylston Street
Suite 310
Boston, MA 02115
Information and Referral: Patricia Hill, (617) 355-7153
Toll Free Instate Only: (800) 848-8867 (Voice/TDD)
Project Director: Judy Brewer, (617) 355-6380
TDD: (617) 355-7301
FAX: (617) 355-6345
INTERNET: brewer_ju@a1.tch.harvard.edu

MICHIGAN TECH 2000 (1992)

Michigan Rehabilitation Services/TECH 2000
P.O. Box 30010
Lansing, MI 48909-7510
Project Manager: Michael Barnes, (517) 373-9233
TDD: (517) 373-4035
FAX: (517) 373-0565
INTERNET: mbarnes@msu.edu

MINNESOTA STAR PROGRAM (1989)

300 Centennial Building
658 Cedar Street
St. Paul, MN 55155
INFOTECH: (800) 331-3027 (V/TDD)
Project Director: Rachel Wobschall, (612) 297-1554
TDD: (612) 296-9962
FAX: (612) 282-6671
INTERNET: mnstars@gteens.com

MISSISSIPPI PROJECT START (1990)

P.O. Box 1000
Jackson, MS 39205-1000
Acting Project Director: Stephen Power
(601) 987-4872 (Voice/TDD)
FAX: (601) 364-2349
INTERNET: mspjtstr@gteens.com

MISSOURI ASSISTIVE TECHNOLOGY PROJECT (1991)

4731 South Cochise, Suite 114
Independence, MO 64055-6975
Information and Referral: Marty Exline, (816) 373-5193 (Voice)
Toll Free TDD Instate Only: (800) 647-8558
Project Director: Diane Golden, (800) 647-8557 (V/TDD)
or (816) 373-5193 (Voice)
FAX: (816) 373-9314

MONTECH (1991)

The University of Montana, MUARID, MonTECH
634 Eddy Avenue
Missoula, MT 59812
Information and Referral: Duane Gimbel
Project Director: Peter Leech
PHONE: (406) 243-5676
TDD (National): (800) 732-0323
FAX: (406) 243-4730

NEBRASKA ASSISTIVE TECHNOLOGY PROJECT (1989)

301 Centennial Mall South
P.O. Box 94987
Lincoln, NE 68509-4987
Information and Referral: Nancy Noha, (402) 471-3647 (V/TDD)
Project Director: Mark Schultz, (402) 471-0735 (V/TDD)
FAX: (402) 471-0117
INTERNET: mschultz@nde4.nde.state.ne.us

NEVADA ASSISTIVE TECHNOLOGY COLLABORATIVE (1990)

Rehabilitation Division
Office of Community Based Services
711 South Stewart Street
Carson City, NV 89710
Information and Referral: Todd Butterworth
Policy Analyst: Jack Reid
PHONE: (702) 687-4452
TDD: (702) 687-3388
FAX: (702) 687-3292
INTERNET: nvreach@gteens.com

NEW HAMPSHIRE TECHNOLOGY PARTNERSHIP PROJECT (1991)

Institute on Disability/UAP
#14, Ten Ferry Street
The Concord Center
Concord, NH 03301
Information and Referral: Carol Richards, (603) 224-0630 (V/TDD)
Project Coordinator: Marion Pawlek, (603) 224-0630 (V/TDD)
FAX: (603) 226-0389
INTERNET: mjpawlek@christa.unh.edu

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NEW JERSEY TECHNOLOGY ASSISTIVE RESOURCE PROGRAM (1992)
135 East State Street
CN 398
Trenton, NJ 08625
Information and Referral: Rick Shanberg, (609) 633-6959
Project Director: Tim Montagano, (609) 292-7498
TDD: (800) 382-7765
FAX: (609) 292-4616

NEW MEXICO TECHNOLOGY ASSISTANCE PROGRAM (1990)
435 St. Michael's Drive, Building D
Santa Fe, NM 87503
Information and Referral: Carol Cadena, (800) 866-ABLE (V/TDD)
Project Director: Andy Winnegar, (505) 827-3532 (V/TDD)
FAX: (505) 827-3746
INTERNET: stdvmmtap@technet.nm.org

NEW YORK STATE TRAID PROJECT (1990)
Office of Advocate for Persons with Disabilities
One Empire State Plaza, Suite 1001
Albany, NY 12223-1150
Project Director: Deborah Buck, (518) 474-2825
TTY: (518) 473-4231
FAX: (518) 473-6005
INTERNET: d.buck@oapwd.state.ny.us

NORTH CAROLINA ASSISTIVE TECHNOLOGY PROJECT (1990)
Department of Human Resources
Division of Vocational Rehabilitation Services
1110 Navaho Drive, Suite 101
Raleigh, NC 27609
Information and Referral: (800) 852-0042
Project Director: Ricki Cook, (919) 850-2787 (Voice/TDD)
FAX: (919) 850-2792
INTERNET: atp@med.unc.edu

NORTH DAKOTA INTERAGENCY PROGRAM FOR ASSISTIVE TECHNOLOGY (IPAT) (1993)
P.O. Box 743
Cavalier, ND 58220
Director: Judie Lee, (701) 265-4807 (Voice/TDD)
FAX: (701) 265-3150
INTERNET: leej@pioneer.state.nd.us

COMMONWEALTH OF THE NORTHERN MARIANA ISLANDS ASSISTIVE TECHNOLOGY PROJECT (1994)
Developmental Disabilities Planning Office
Office of the Governor
P.O. Box 2565
Saipan, MP 96950
Executive Director: Juanita S. Malone
PHONE/TDD: (670) 322-3014
FAX: (670) 322-4168

OHIO TRAIN (1992)
Ohio Super Computer Center
1224 Kinnear Road
Columbus, OH 43212
Principal Investigator: Dr. Sheldon Simon
PHONE/TDD: (614) 292-2426
TOLL FREE INSTATE ONLY: (800) 784-3425 (V/TDD)
FAX: (614) 292-5866

OKLAHOMA ABLE TECH (1992)
Oklahoma State University
Wellness Center
1514 W. Hall of Fame
Stillwater, OK 74078-0618
Project Director: Susan Haase
PHONE: (405) 744-9355
TOLL FREE: (800) 316-4119
TDD: (800) 257-1705 (V/TDD)
FAX: (405) 744-7670
INTERNET: haase@okway.okstate.edu

OREGON TECHNOLOGY ACCESS FOR LIFE NEEDS PROJECT (TALN) (1990)
Chemeketa Community College
P.O. Box 14007
Salem, OR 97309-7070
Project Director: Susan McNaught
PHONE/TDD: (503) 399-4950
TOLL FREE INSTATE ONLY: (800) 677-7512 (V/TDD)
FAX: (503) 399-6978

PENNSYLVANIA'S INITIATIVE ON ASSISTIVE TECHNOLOGY (1992)
Institute on Disability/UAP
Ritter Hall Annex 433 (004-00)
Philadelphia, PA 19122
Information and Referral: Kirk Behnke, (215) 204-1356 (V/TDD)
Project Director: Amy Goldman, (215) 204-1356 (V/TDD)
FAX: (215) 204-9371
INTERNET: piat@astro.ocis.temple.edu

PUERTO RICO ASSISTIVE TECHNOLOGY PROJECT (1993)
University of Puerto Rico
Medical Sciences Campus
College of Related Health Professions
Department of Communication Disorders
Box 365067
San Juan, PR 00936
Project Director: Dr. José R. Santana
FROM U.S. MAINLAND: (800) 496-6035
TOLL FREE IN PR ONLY: (800) 981-6033
FAX: (809) 759-3645

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RHODE ISLAND ASSISTIVE TECHNOLOGY ACCESS PROJECT (1993)
Office of Rehabilitation Services
40 Fountain Street
Providence, RI 02903-1898
Acting Project Director: Joseph Farrell, (401) 421-7005
Toll Free in RI (800) 752-8038 ext.2608
TDD: (401) 421-7016
FAX: (401) 274-1920
INTERNET: ab195@osfn.rhilinet.gov

SOUTH CAROLINA ASSISTIVE TECHNOLOGY PROGRAM (1991)
Vocational Rehabilitation Department
P.O. Box 15, 1410-C Boston Avenue
West Columbia, SC 29171-0015
Information and Referral: Lillian Smith, (803) 822-5404 (V/TDD)
Project Director: Chip Harriford, (803) 822-5404 (V/TDD)
FAX: (803) 822-4301
INTERNET: 74407.3406@compuserve.com

DAKOTALINK (1992)
1925 Plaza Boulevard
Rapid City, SD 57702
Information and Referral: Juanita Palmer-Lloyd
(800) 645-0673 (Voice/TDD);
or (605) 394-1876 (Voice/TDD)
Project Manager: Ron Reed, (605) 394-1876
FAX: (605) 394-5315
INTERNET: rreed@sdtie.sdserv.org

TENNESSEE TECHNOLOGY ACCESS PROJECT (1990)
710 James Robertson Parkway
Gateway Plaza, 11th floor
Nashville, TN 37243-0675
Information and Referral: Anastasia Koshakji, (615) 532-6530
TOLL FREE INSTATE ONLY: (800) 732-5059
TDD: (615) 532-6612
Project Director: Rob Roberts, (615) 532-6530
FAX: (615) 532-6964

TEXAS ASSISTIVE TECHNOLOGY PARTNERSHIP (1992)
University of Texas at Austin, UAP of Texas
Department of Special Education, EDB 306
Austin, TX 78712
Information and Referral: (800) 828-7839
Project Director: Brian Bryant, (512) 471-7621
TDD: (512) 471-1844
FAX: (512) 471-7549
INTERNET: bbryant@mail.utexas.edu

UTAH ASSISTIVE TECHNOLOGY PROGRAM (1989)
Center for Persons with Disabilities
UMC 6855
Logan, UT 84322-6855
Information and Referral: (800) 333-UTAH (Voice/TDD)
Project Director: Marvin Fifield, Ed.D., (801) 797-1982
TDD: (801) 797-2096
FAX: (801) 797-2355
INTERNET: mmenlove@cc.usu.edu

VERMONT ASSISTIVE TECHNOLOGY PROJECT (1990)
103 South Main Street, Weeks I
Waterbury, VT 05671-2305
Project Director: Christine Pellegrino, (802) 241-2620 (V/TDD)
FAX: (802) 241-3052
INTERNET: vtvatp@gteens.com

VIRGINIA ASSISTIVE TECHNOLOGY SYSTEM (1990)
8004 Franklin Farms Drive
P.O. Box K300
Richmond, VA 23288-0300
Information and Referral: Michael Snapp, (804) 662-9993
Project Director: Kenneth Knorr, (804) 662-9990 (V/TDD)
FAX: (804) 662-9478
INTERNET: csc8mls@cabell.vcu.edu

WASHINGTON ASSISTIVE TECHNOLOGY ALLIANCE (1993)
DSHS/DVR
P.O. Box 45340
Olympia, WA 98504-5340
Project Director: David Hooks, Sr., Ph.D.
PHONE: (206) 438-8051
TDD: (206) 438-8644
FAX: (206) 438-8007
INTERNET: dhooks@dshs.wa.gov

WEST VIRGINIA ASSISTIVE TECHNOLOGY SYSTEM (1992)
Division of Rehabilitation Services
P.O. Box 50890, State Capitol
Charleston, WV 25305-0890
Information and Referral: Rachel Bower, (800) 841-8436
Project Director: Tom Minshall, (304) 766-4698
TDD: (304) 293-4692
FAX: (304) 293-7294
INTERNET: reb@wvnvm.wvnet.edu

WISTECH (1990)
Division of Vocational Rehabilitation
P.O. Box 7852
1 W. Wilson Street, Room 950
Madison, WI 53707-7852
Information and Referral: Linda Rowley, (608) 266-5395
Project Director: Judi Trampf, (608) 267-6720
TDD: (608) 266-9599
FAX: (608) 267-3657
INTERNET: trampf@aol.com

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WYOMING'S NEW OPTIONS IN TECHNOLOGY (WYNOT) (1993)
Division of Vocational Rehabilitation
1100 Herschler Building
Cheyenne, WY 82002
Project Director: Kirk McKinney, (307) 777-6947
PHONE/TDD: (307) 777-4386 or 777-7450
FAX: (307) 777-5939
INTERNET: wy613h@wydsprod.state.wy.us

Many states have regional assistive technology resource centers. To find out if there is a center near you, call your state's Tech Act project. In states where no I & R contact is listed, the Project Director can assist you.

G:\TRANSFERCONTACT.WP July 24, 1996

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The Alliance for Technology Access
ATA Resource Centers:

ALABAMA
Birmingham Alliance for
Technology Access Center
Birmingham Independent Living Center
206 13th St. S.
Brimingham, AL 35253-1317
205-251-2223

Technology Assistance for
Special Consumers
P.O. Box 443
Huntsville, AL 35804
205-532-5996

ALASKA
Alaska Services for Enabling Technology
207 Moller Dr.,
P.O.Box 6485
Sitka, AK 99835
907-747-7615

ARKANSAS
Arkansas Technology Resource Center
Arkansas Easter Seal Society
3920 Woodland Heights Rd.
Little Rock, AR 72212
501-227-3600

ARIZONA
Technology Access Center of Tucson, Inc.
4710 E 29th St.
P.O.Box 13178
Tucson, AZ 85732-3178
602-745-5588 - ext 412

CALIFORNIA
Computer Access Center
P.O.Box 5336
Santa Monica, CA 90409-5336
310-829-6395;
310-338-1597

Center for Accessible Technology
2547 8th St., 12-A
Berkeley, CA 94710-2572
510-841-3224

Special Technology Center
590 Castro St.
Mountain View, CA 94041
415-961-6789

Special Awareness Computer Center
Rehab Unit North,
2975 N. Sycamore Dr.
Simi Valley, CA 93065
805-582-1881

Sacramento Center for Assistive Technology
4370 Mather School Rd.
Mather, CA 95655-0301
916-361-0553

Team of Advocates for Special Kids
100 W. Cerritos Ave.
Anaheim, CA 92805-6546
714-533-8275

FLORIDA
CITE(Center for Independence, Technology
and Education)
215 E. New Hampshire St.
Orlando, FL 32804
407-898-2483

GEORGIA
Tech-Able
1140 Ellington Dr.
Conyers, GA 30207
770-922-6768

HAWAII
Aloha Special Technology Access Center
710 Green St.
Honolulu, HI 96813-2119
808-523-5547

ILLINOIS
Technical Aids and Assistance
for the Disabled
1950 W. Roosevelt Rd.
Chicago, IL 60608
312-421-3373

Northern Illinois Center for
Adaptive Technology
3615 Louisiana Rd.
Rockford, IL 61108-6195
815-229-2163

INDIANA
Assistive Technology Training and
Information Center
3354 Pine Hill Dr.
P.O.Box 2441
Vincennes, IN 47591
812-886-0575

KANSAS
Technology Resource Solutions for People
P.O.Box 1160
1710 W. Schilling Rd.
Salina, KS 67402-1160
913-827-9383

KENTUCKY
SpeciaLink
36 W. 5th St.
Covington, KY 41011
606-491-2464

Enabling Technologies of Kentuckiona
Louisville Free Public Library
301 York St.
Louisville, KY 40203
502-574-1637
800-327-KATS (in state)

Bluegrass Technology Center for
People with Disabilities
169 N. Limestone
Lexington, KY 40507
606-255-9951

MARYLAND
Learning Independence Through Computers,
Inc.
28 E. Ostend St., Ste. 140
Baltimore, MD 21230
410-659-5462

MASSACHUSETTS
Massachusetts Special Technology
Access Center
12 Mudge Way, 1-6
Bedford, MA 01730-2138
617-275-2446

MICHIGAN
Living and Learning Resource Centre,
Physically Impaired Association of Michigan
600 W. Maple St.
Lansing, MI 48906-5038
517-487-0883
800-833-1996 (MI)

MINNESOTA
PACER Center, Inc.
4826 Chicago Ave. S.
Minneapolis, MN 55417-1055
612-827-2966

MISSOURI
Technology Access Center
12110 Clayton Rd.
St. Louis, MO 63131-2599
314-569-8404

MONTANA
Parents, Let's Unite for Kids
MSU-B/SPED 267, 1500 N. 30th St.
Billings, MT 59101-0298
406-657-2055
800-222-7585 (MT)

NEW JERSEY
Computer Center for People with disAbilities
35 Haddon Ave.
Shrewsbury, NJ 07702-4007
908-747-5310

The Center for Enabling Technology
622 Rt. 10W., Ste. 22B
Whippany, NJ 07981
201-428-1455

NEW YORK
Techspress, Resource Center for
Independent Living
401-409 Columbia St.,
P.O.Box 210
Utica, NY 13503-0210
315-797-4642

NORTH CAROLINA
Carolina Computer Access Center
Metro School
700 E. Second St.
Charlotte, NC 28202-2826
704-342-3004

OHIO
Technology Resource Center, Inc.:
Enabling People with Disabilities
301 Valley St.
Dayton, OH 45404-1840
513-222-5222

ONTARIO, CANADA
Alliance Centre for Technology
Peterborough Sq.,
360 George St., Ste. 202
Peterborough, ON K9J7E7 Canada
705-741-4214

RHODE ISLAND
TechACCESS of Rhode Island
300 Richmond St.
Providence, RI 02903-4222
401-273-1990;
800-916-TECH (RI)

TENNESSEE
West Tennessee Special Technology
Access,
Resource Center (STAR)
60 Lynoak Cove
P.O.Box 3683
Jackson, TN 38305
901-668-3888

Technology Access Center of Middle
Tennessee
Fountain Sq., Ste. 126,
2222 Metrocenter Blvd.
Nashville, TN 37228
615-248-6733
800-368-4651

East Tennessee Special Technology
Access Center, Inc.
3525 Emory Rd. N.W.
Powell, TN 37849
423-947-2191;
423-947-2192

UTAH
Computer Center for Citizens with Disabilities
Utah Center for Assistive Technology
2056 S. 1100 East
Salt Lake City, UT 84106
801-485-9152

VIRGIN ISLANDS
Virgin Islands Resource Center for
the Disabled, Inc.
P.O.Box 308427
St. Thomas, VI 00803-8427
809-777-2253

VIRGINIA
Tidewater Center for Technology Access
Special Education Annex,
960 Windsor Oaks Blvd.
Virginia Beach, VA 23462
804-474-8650

WEST VIRGINIA
Eastern Panhandle Technology
Access Center, Inc.
110 Mordington Ave.,
P.O.Box 987
Charles Town, WV 25414
304-725-6473

Selected Assistive Technology Books and Resources

Alliance for Technology Access. (1994). *Computer resources for people with disabilities.* Alameda, CA: Hunter House Inc.

Angelo, J. (1996). *Assistive technology for the rehabilitation therapist.* Philadelphia: F.A. Davis.

Borden, P.A., Lubich, J.L., & Vanderheiden, G.C. (Eds.). (1995). *TRACE resource book: Assistive technologies for communication, control and computer access, 1996-97 edition.* Madison, VI: University of Wisconsin-Madison Press.

Church, G. & Glennen, S. (1992). *The Handbook of assistive technology.* San Diego: Singular Publishing Group.

*Closing the Gap. (1996). Resource directory: A guide to the selection of microcomputer technology for special education and rehabilitation. *Closing the Gap, 14,* 35-251.

Cook, A., & Hussey, S. (1995). *Assistive technologies: Principles and practice.* St. Louis: Mosby.

Hammill, J. (Ed.). (1996). *Technology Self-Study.* Rockville, MD: American Occupational Therapy Association

Harlan, N.T., & Bruskin, D.M. (Eds.). (1992). *Technology in the classroom: Applications and strategies for the education of children with severe disabilities.* Rockville, MD: American Speech-Language-Hearing Association.

*Hyper-ABLEDATA. (computer software). (1996). Madison, WI: Trace Research & Development Center.

Lazzaro, J.J. (1996). *Adapting PCs for disabilities.* Reading, MA: Addison-Wesley.

Lewis, R. (1993). *Special education technology; Classroom applications.* Pacific Grove, CA: Brooks/Cole.

Mann, W.C., & Lane, J.P. (1995). *Assistive technology for persons with disabilities.* Rockville, MD: American Occupational Therapy Association

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* See the following pages for examples of these resources.

Selected Assistive Technology Books and Resources

Closing the Gap Resource Directory

This Resource Directory includes charts that provide quick references to product features as well as individual descriptions of hardware and software products. Another section of this publication provides information about the companies who sell the assistive technology presented. Addresses for other organizations also can be found in the directory. See the following pages for examples of this information and the format used in this publication. This Resource Directory is included in the subscription price to *Closing the Gap*, or you can purchase it separately.

	INPUT DEVICES								OUTPUT DEVICES						OTHER			DISABILITIES						COMPUTER			
	ALTERNATE KEYBOARD	BRAILLE INPUT	GAME PORT INPUT	KEYBOARD EMULATOR	KEYGUARD	OPTICAL CHARACTER RECOGNITION	SWITCH	VOICE INPUT	BRAILLE OUTPUT	DEDICATED COMMUNICATOR	ENVIRONMENTAL CONTROL	LARGE PRINT DISPLAY	PRINTER	SPEECH OUTPUT	MODEMS	SPEECH TRAINER	OTHER DEVICES	HEARING	LEARNING	MENTAL	PHYSICAL	SPEECH	VISION	APPLE	MACINTOSH	IBM PC	OTHER
12 Foot Cable for Apple IIGS RGB Monitor																	X							X			
AC Adapter							X														X						
Accent														X									X			X	
Access-I Personal Computer																		X	X	X	X	X	X			X	
Accessible Toys																	X				X						
ACS Controller											X										X						
ACS Controller with Voice Activate											X										X						
ACS EvalPAC with RealVoice	X									X				X							X	X					
ACS Gross Motor Switches and Controls							X				X										X						
ACS Samy System								X		X	X			X							X	X					
ACS ScanPAC with RealVoice										X			X	X							X	X					
ACS Twinkle Remote Sender and Receiver Switch							X														X						
ActionVoice							X			X				X					X	X	X	X					
Activity Board							X													X	X						
Adapted Musical Keyboard and Music Mat																	X		X	X	X						
Adaptive Firmware Card (Model G32e for the Apple IIGS and				X																X	X			X			
ADJUSTable																	X				X						
Aerophone II (Model 6800)																X						X				X	
AKI-2E Emulator for Apple II, IIe, II+				X																	X			X			
Aladdin												X											X				
Alpha Numeric Replacement Keytop Labels	X																				X				X	X	
AlphaSmart					X														X	X	X		X		X		
AlphaTalker										X				X						X	X	X		X	X	X	
ALVA Braille Terminal		X																					X				
An Open Book						X			X			X	X	X	X				X				X				
An Open Book Unbound System						X			X			X	X	X					X				X			X	
Apple Adjustable Keyboard	X																				X				X		
Apple Computer Input Adapter			X																		X			X			
Apple IIe or IBM PC Joystick Input Adapter			X																		X			X		X	
AppleMouse II			X																		X			X			
ArkenClone Personal Computer						X			X			X	X	X					X		X		X				
Arkenstone Reader						X													X				X			X	
Artic Gizmo2 (Basic and Advanced) Pad (for Visions)	X																						X			X	
Artic Gizmo2 Pad (for Magnum)	X																						X			X	
Artic MAX Basic																	X						X				

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HARDWARE DESCRIPTIONS

12 Foot Cable for Apple IIGS RGB Monitor
Moonlight Software
Price: $40.00
Device Type: other (cable)
Disability: n/a
Computer: Apple IIGS
Requirements: RGB monitor
12 foot cable for the Apple RGB monitor.

A

AC Adapter
Creative Switch Industries
Price: $75.50
Device Type: switch
Disability: physical
Computer: n/a
Requirements: n/a
This control unit accepts any electrical appliance up to 1200 watts and converts it to switch use. It has 3.5 mm jack and 6 inch grounded cord to wall outlet.

Accent
Aicom Corporation
Price: $395.00-$995.00
Device Type: speech output
Disability: vision
Computer: IBM PC; other (Toshiba)
Requirements: n/a
A text-to-speech synthesizer. Various models available are Accent PC - full length PC plug-in card; Accent MC-Microchannel plug-in card; Accent SA- Stand-alone version; Accent 1600 - Toshiba T1600 and T1200; Accent XE - Toshiba T1000SE/XE/LE plug-in card; Accent SX - Toshiba T1200XE, T2000/SX/SXE plug-in card; and Accent L40-IBM PS/2 L40 SX plug-in card.

Access-I Personal Computer
WorkLink Innovations, Inc.
Price: $5,600.00
Device Type: n/a
Disability: speech; vision; hearing; physical; mental; learning
Computer: IBM PC
Requirements: n/a
Access I is a 486-66 DX2 expandable IBM compatible computer that is mounted on wheelchair. It can go all day without recharging. It accommodates 5 ISA expansion cards, and will use any IBM Compatible input/output device. It can access via radio waves an ethernet LAN with any type of computer that is attached to the LAN. It can remotely access another computer by means of peer-to-peer software. It will accommodate environmental control systems, voice input, voice output, head pointers, single-switch devices, etc.

ACS Controller
ACS Technologies
Price: $1,895.00
Device Type: environmental control
Disability: physical
Computer: n/a
Requirements: n/a
A trainable infrared environmental controller operated by keyboard or scanning. The Controller has a 2-line, 16-character LCD display and 7 x 5-column membrane keyboard or scanning panel. The key size is 1/2 inch. This device will allow the user to control most devices that are controllable by infrared remotes: TV, VCR, Radio, Lights, etc. The controller is 2 x 4 x 8 inches and weighs 1.5 lbs. It easily mounts to a wheelchair. It can also be operated from a computer by connecting it to the serial port. Voice activation. Capable of operating infrared telephone (TASH).

ACS Controller with Voice Activate
ACS Technologies
Price: $3,495.00
Device Type: environmental control
Disability: physical
Computer: n/a
Requirements: n/a
With the ACS Controller you can accomplish control of many devices without the need for wires, connections, or modification to standard devices. It can replace the remote control for your TV, VCR, and stereo and adds control for other appliances such as lights and phone. It can be operated by direct selection on the membrane keypad; row or column scanning; or one utterance commands. It has a preset vocabulary with the exception that you can enter a few new word commands. The Controller is 4"x7.5"x1.75" and weighs 18 ounces.

ACS EvalPAC with RealVoice
ACS Technologies
Price: $3,995.00
Device Type: alternative keyboard; dedicated communicator; speech output
Disability: physical; speech
Computer: n/a
Requirements: n/a
The EvalPAC with RealVoice is a portable battery-powered communication aid with a human voice-quality, diphone-based speech synthesizer available in male or female voice. The EvalPAC can be mounted in a number of positions and can be attached to the front of the Epson keyboard. The EvalPAC can be accessed through the Light Pointer, scanning, joystick control, Morse code (single or dual switch), and the memkey board. The EvalPAC has the same built-in features of the RealVoice.

ACS Gross Motor Switches and Controls
ACS Technologies
Price: Priced Individually
Device Type: environmental control; switch
Disability: physical

ACS Samy System
ACS Technologies
Price: $4,100.00
Device Type: dedicated communicator; envir
mental control; voice input; speech output
Disability: physical; speech
Computer: n/a
Requirements: n/a
A portable Macintosh compatible communication
vice and educational system. Features include to
screen and scanning capabilities, built-in keybo
hard disk drive (40MB or 105MB), and Mayer-John
Talking Pictures and Board Maker program. Opti
include environmental control, Navigator voice con
and RealVoice synthesizer (male, female, or the all
child's voice). It can also be operated with an expan
keyboard or a mouse. An 8MHz 6800 processor is
percent compatible with the Apple manufactured
Classic logic board engine. The built-in external S
ADB, floppy, printer, speaker, external CRT, and
dem ports are all standard.

ACS ScanPAC with RealVoice
ACS Technologies
Price: $3,695.00
Device Type: dedicated communicator; print
speech output
Disability: physical; speech
Computer: n/a
Requirements: n/a
A portable battery-powered communication aid wi
human voice quality, diphone-based speech syn
sizer available in male or female voice. The ScanF
can be easily mounted in a number of positions and
be attached to the front of the Epson keyboard.
ScanPAC can be accessed through scanning, joys
control, Morse code (single or dual switch). The ScanF
has the same built-in features of the RealVoice.

ACS Twinkle Remote Sender and Receiver Switch
ACS Technologies
Price: $975.00
Device Type: switch
Disability: physical
Computer: n/a
Requirements: n/a
The Twinkle switch is designed to allow an individu
control any single or dual switch device by either left
right eye movement or left and right head moven
within 6 to 10 feet of the Twinkle remote receiver.
user wears two small removable electrodes between
eyes and ears. These electrodes monitor the mi
electrical impulses generated when eye movement
curs. The Twinkle remote sender is a small box us
wear on their shirt or around their neck. The eye mc
ments send infrared signals to the Twinkle ren
receiver. System includes one remote sender, one
mote receiver, charger, two mouse cables, one mor
supply of electrodes and creme, and a manual.

ActionVoice

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A/V Concepts Corporation
30 Montauk Blvd.
Oakdale, NY 11769
516-567-7227 FAX: 516-567-8745
Bring the Classics to Life
CLOZE Thinking
CLOZE Vocabulary and More
Contained Reading Series
TAC-PAT Looking at Components

Ability Research, Inc.
P.O. Box 1721
Minnetonka, MN 55345
612-939-0121 FAX: 612-890-8393
ActionVoice
LightBeam
LightBoard
LightSwitch
Up and Running for the LightBoard

Ability Systems Corp.
1422 Arnold Ave.
Roslyn, PA 19001
215-657-4338
Proportional Keystroke Scanner
KeyUp

AbleNet, Inc.
1081 10th Ave. S.E.
Minneapolis, MN 55414-1312
612-379-0956 800-322-0956
FAX: 612-379-9143
Battery Device Adapter
Big Red
Computer Switch Interface
Four-Bean Holder
Jelly Bean Switch
PowerLink 2 Control Unit
Series Adapter
Slide Projector Control
Slim Armstrong Mounting System
SpeakEasy
String Switch
Switch Latch and Timer
Two-Bean Holder
Universal Switch Mounting System

AbleTech Connection
P.O. Box 898
Westerville, OH 43081
614-899-9989
FAX: 614-899-9979
Compu-Lenz

Academic Software, Inc.
331 W. 2nd St
Lexington, KY 40507
606-233-2332 FAX: 606-231-0725
SS-Access!
Universal Adaptive Switch
Adaptive Device Locater System
Dino-Dot
Dino-Find
Dino-Like
Dino-Maze
MultiScan
Picture Icon X-Change

Academic Therapy Publications
20 Commercial Blvd.
Novato, CA 94949
Sharon's Program Series
Story Mix Series by Bertamax
Type-Talk

AccessAbility Technologies, Inc. (BAUM USA)
17525 Ventura Blvd., Ste. 303
Encino, CA 91316-3843
818-981-2253 FAX: 818-981-7124
Vision, Swing, Cursorstar, Virgo

Acrontech International, Inc.
The Williamsville Executive Ctr.,
5500 Main St.
Williamsville, NY 14221
716-854-3814 800-245-2020
FAX: 716-854-4014
Comtel
ELITE Transportable In-Line CCTV
Travel X

ACS Technologies
1400 Lee Dr.
Coraopolis, PA 15108
412-269-6656 800-227-2922
FAX: 412-269-6675
ACS Controller
ACS Controller with Voice Activate
ACS EvalPAC with RealVoice
ACS Gross Motor Switches and Controls
ACS Samy System
ACS ScanPAC with RealVoice
ACS Twinkle Remote Sender and Receiver Switch
DAC (Digital Augmentative Communicator)
RealVoice
RealVoice with Small Memkey Board
Aurora

ACTT (Activating Children Through Technology)
Project ACTT, 27 Horrabin Hall,
W. Illinois University
Macomb, IL 61455
309-298-1014 FAX: 309-298-2305
Master Blaster
Peek & Speak
Simple Switch Activities
Switch 'n See

ADAMLAB
33500 Van Born Rd., P.O. Box 807
Wayne, MI 48184
313-467-1415 FAX: 313-326-2610
Hawk
Wolf
Wolf Cartridge(s)
Wolf with AIPS
Wolf with Whisper

AdapTech, Inc.
ISU Research Park,
2501 N. Loop Dr.
Ames, IA 50010
515-296-7171 800-7-ADAPTEC
FAX: 515-296-9910
FreeSwitch
LinkSwitch
Taction Pad
Vibration Switch
VoicePal
VoicePal Plus

Ai Squared
P.O Box 669
Manchester Center, VT 05255-0669
802-362-3612 FAX: 802-362-1670
inFocus
VisAbility
ZoomText
ZoomText Plus

Aicom Corporation
1590 Oakland Rd., B112
San Jose, CA 95131
408-453-8251 FAX: 408-453-8255
Accent
Messenger-IC

American College Testing
ESD, P.O. Box 168
Iowa City, IA 52243
410-584-8000 FAX: 410-785-1714
R.A.V.E. (Realistic Assessment of Vocational Experiences)
WorkNet

American Guidance Service
4201 Woodland Rd.
Circle Pines, MN 55014-1796
612-786-4343 800-328-2560
FAX: 612-786-5603
MicroSoc Thinking Games

American Printing House for the Blind
P.O. Box 6085,
1839 Frankfort Ave.
Louisville, KY 40206-0085
502-895-2405 800-223-1839
FAX: 502-895-1509
Braille 'n Speak Classic
Brailled Keyboard (Model Apple IIe)
Brailled Keyboard Overlay (Apple IIGS)
Echo II with Textalker and Textalker-GS
Nomad by APH
Nomad Gold
Picture Braille
Speaqualizer
APH/SEI Talking Software
Elementary Volume 1: Mathematics
Food Facts
LetterTalk+
PC Typer
Prefixes
Sensible Speller, Talking APH Edition
Speaking Speller
Talking Typer
Talking Utilities for DOS 3.3
Talking Utilities for ProDOS
Teacher's Pet (American Printing House for the Blind)
Textalker
Textalker-GS

American Thermoform Corp.
2311 Travers Ave.
City of Commerce, CA 90040
213-723-9021 FAX: 213-728-8877
Braillo 200 Interpoint Printer
Braillo 400S
Braillo Comet
KTS Refreshable Braille Display
Ohtsuki BT-5000

Apple Computer, Inc.
One Infinite Loop, MS 38DS
Cupertino, CA 95014
800-776-2333;
800-833-6223 (TDD)
Apple Adjustable Keyboard
AppleMouse II
Macintosh PowerBook
CloseView
Easy Access
HyperCard

Aquarius Instructional
P.O. Box 128
Indian Rocks Beach, FL 3463
813-595-7890 800-338-2
Alphabetizing
Contemporary Living
Handling Money
Junior Typer
Personal Consumerism Unit
Work Series Unit

Arkenstone, Inc.
1390 Borregas Ave.
Sunnyvale, CA 94089-1004
408-752-2200 800-444-4
FAX: 408-745-6739
An Open Book
An Open Book Unbound System
ArkenClone Personal Computer
Arkenstone Reader
Dolphin Apollo II Synthesizers
Infovox Synthesizers
PC DECtalk
An Open Book Unbound
Software for the Arkenstone Reader

Artic Technologies
55 Park St.
Troy, MI 48083
810-588-7370 FAX: 810-588-
Artic Gizmo2 (Basic and Advanced)
Visions)
Artic Gizmo2 Pad (for Magnum)
Artic MAX Basic
Artic TransBook
Artic Transport Classic
Artic TransType Basic
Artic TransType Deluxe
Artic Turbo-Pedals Option
Mini TransPort II
Mini TransPort II Deluxe
SynPhonix 210, MC-310
Artic AdVEST
Artic Business Vision
Artic Business Vision Omni
Artic Encore!
Artic Magnum Deluxe
Artic Magnum GT
Artic WinVision 2.0
Artic WinVision Solo
Business Vision DT

Articulate Systems, Inc.
600 W. Cummings Pk., Ste. 4
Woburn, MA 01801
617-935-5656 800-443-7
FAX: 617-935-0490
PowerSecretary

Artificial Language Laboratory
405 Computer Ctr.,
Michigan State University

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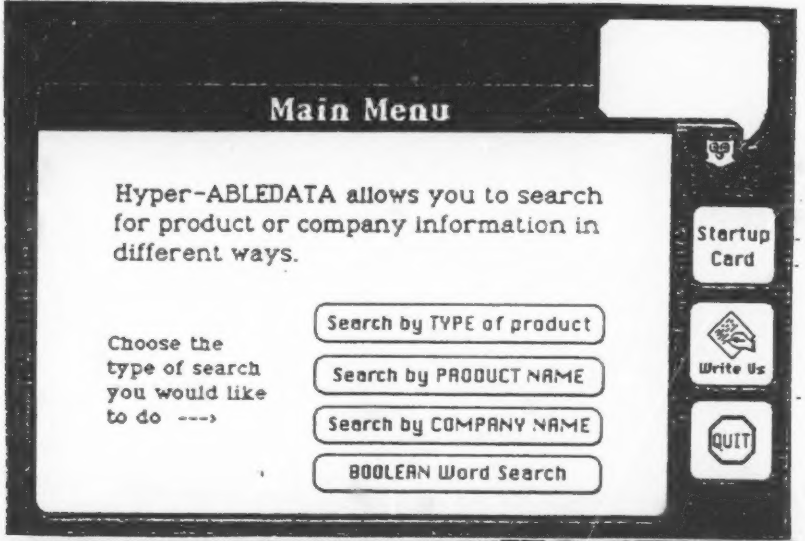
Selected Assistive Technology Books and Resources

Hyper-ABLEDATA

Hyper-ABLEDATA is a software program maintained and updated regularly by the TRACE R&D Center at the University of Wisconsin in Madison. This database provides descriptions, company names and ordering information on thousands of assistive technology products. Following are some examples of screens from this program, including the main menu that allows you several ways to search for products. On the next page you will find an example of a function outline that allows you to define and narrow your search and a product description.

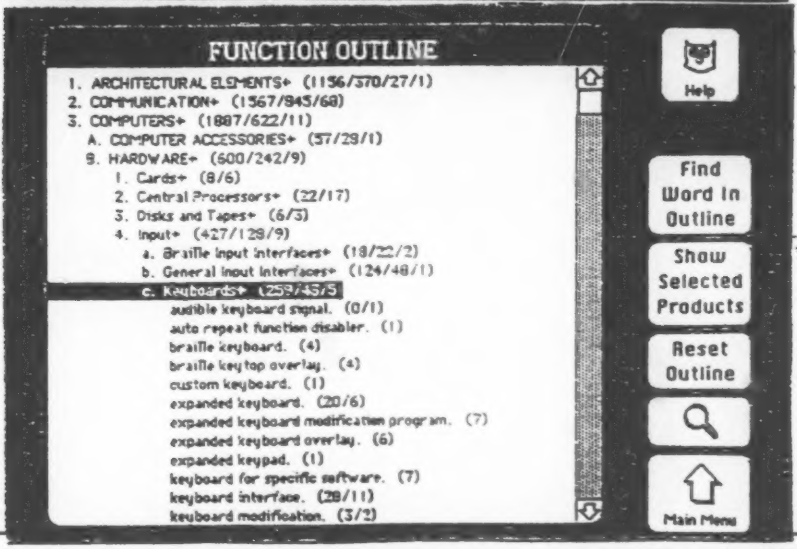


Main Menu

Hyper-ABLEDATA allows you to search for product or company information in different ways.

Choose the type of search you would like to do --->

Search by TYPE of product
Search by PRODUCT NAME
Search by COMPANY NAME
BOOLEAN Word Search
Startup Card
Write Us
QUIT



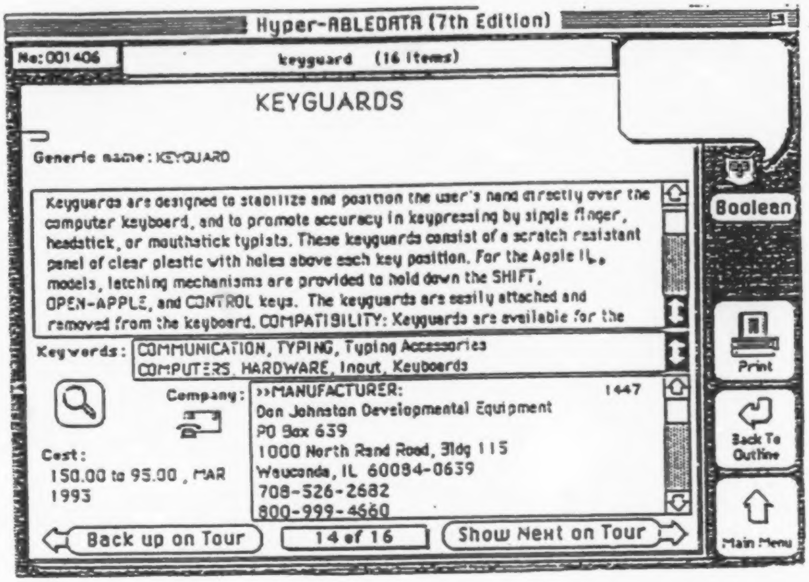
FUNCTION OUTLINE

```
1. ARCHITECTURAL ELEMENTS+ (1156/370/27/1)
2. COMMUNICATION+ (1567/945/68)
3. COMPUTERS+ (1887/622/11)
  A. COMPUTER ACCESSORIES+ (57/29/1)
  B. HARDWARE+ (600/242/9)
     1. Cards+ (8/6)
     2. Central Processors+ (22/17)
     3. Disks and Tapes+ (6/3)
     4. Input+ (427/129/9)
        a. Braille Input Interfaces+ (18/22/2)
        b. General Input Interfaces+ (124/48/1)
        c. Keyboards+ (259/45/5)
           audible keyboard signal. (0/1)
           auto repeat function disabler. (1)
           braille keyboard. (4)
           braille keytop overlay. (4)
           custom keyboard. (1)
           expanded keyboard. (20/6)
           expanded keyboard modification program. (7)
           expanded keyboard overlay. (6)
           expanded keypad. (1)
           keyboard for specific software. (7)
           keyboard interface. (28/11)
           keyboard modification. (3/2)
```

Help
Find Word In Outline
Show Selected Products
Reset Outline
Main Menu

Selected Assistive Technology Books and Resources

Hyper-ABLEDATA



No:001406

keyguard (16 items)

KEYGUARDS

Generic name: KEYGUARD

Keyguards are designed to stabilize and position the user's hand directly over the computer keyboard, and to promote accuracy in keypressing by single finger, headstick, or mouthstick typists. These keyguards consist of a scratch resistant panel of clear plastic with holes above each key position. For the Apple IIe models, latching mechanisms are provided to hold down the SHIFT, OPEN-APPLE, and CONTROL keys. The keyguards are easily attached and removed from the keyboard. COMPATIBILITY: Keyguards are available for the

Keywords: COMMUNICATION, TYPING, Typing Accessories
COMPUTERS, HARDWARE, Input, Keyboards

Company: >>MANUFACTURER: 1447
Don Johnston Developmental Equipment
PO Box 639
1000 North Rand Road, Bldg 115
Wauconda, IL 60084-0639
708-526-2682
800-999-4660

Cost:
150.00 to 95.00, MAR 1993

Useful Sites on the World Wide Web

The world wide web is full of information on almost every subject. Here are some specific addresses you can start with if you are looking for information on the web about assistive technology.

The Adaptive Technology Notebook
http://www.crl.com/~pcone/notebook.htm

Disability Information
http://www.rehab.uiuc.edu/pursuit/dis-resources/dis-resources.html

disABILITY Information and Resources
http://www.eskimo.com/~jlubin/disabled.html

NCIP (National Center to Improve Practice in Special Education Through Technology)
http://www.edc.org/FSC/NCIP

WebABLE
http://www.webable.com/

Many companies that provide assistive technology also have their own web sites. Usually you can reach this site by typing in the companies name.

Selected Low-Tech Equipment Catalogs

In the ASTECH software program, we mentioned that low-tech devices may be considered a form of environmental control that could be used for activities of daily living (ADLs) and recreation in the school setting. Therefore, we have listed several companies that supply low-tech assistive devices. You can request catalogs from these companies by calling the numbers listed below.

Company	Phone numbers
adaptAbility	800-266-8856
Cleo, Inc.	800-321-0595
Enrichments & Sammons-Preston	800-323-5547
Flaghouse	800-793-7900
Maxi Aids	800-522-6294
North Coast Medical	800-821-9319
Sesquehanna Rehab Products	800-248-2011
Smith & Nephew Rehabilitation	800-588-8633

NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About

AUTISM

✧ Definition ✧

Autism is a developmental disorder which usually becomes evident before the age of three years. It is a neurological or brain disorder in which behavior, communication, and social interactions are the primary disabilities.

✧ Incidence ✧

The rate of incidence, or how often autism occurs in children, ranges from five to fifteen out of 10,000 births. The different estimates are based on slightly different definitions of autism.

It is three times more common in boys than girls and is rarely found in more than one child in a family.

Autism can be caused by a number of factors, but the cause in the vast majority is not known. It is known that autism is caused by biological, not psychological, factors.

✧ Characteristics ✧

Some babies show signs of autism from infancy. They may not like to cuddle and may show little interest in their families.

Typical characteristics of autism are often described as:

- difficulty relating to people, objects and events;
- repetitive movements such as rocking and spinning, head banging and hand twisting;
- insistence that the environment and routine remain unchanged;
- avoidance of eye contact;
- verbal and nonverbal communication skills are severely impaired;
- use of toys and objects is an unconventional manner, little imaginative play;
- severe impairment of social interaction development; and
- limited intellectual ability.

It should be noted that any one of these characteristics may occur in children with other disabilities. In these cases the term "autistic-like" behavior is used.

✧ Educational Implications ✧

Early diagnosis and educational evaluation of autism are very important, although help given at any age can make a significant difference.

Public Law 101-476, the Individuals with Disabilities Education Act (IDEA), formerly the Education of the Handicapped Act, now includes autism as a separate disability category. Children with autism will be eligible for special education and related services under this new category.

Until recently, children with autism have been eligible for special education and related services under the category of "other health impaired." The regulations (CFR 300.5) to the Education of the Handicapped Act state, "Other health impaired means (i) having an autistic condition which is manifested by severe communication and other developmental and educational problems...". These regulations will be changed to reflect autism as a category included under the IDEA.

Emphasis in education needs to be on helping the child to learn ways to communicate and on structuring the environment so that it is consistent and predictable. Effective teaching includes attention to behavior plans, positive behavior management, and clear expectations and rules.

Many of these methods can be developed in conjunction with parents and followed through at home. Continuity and consistency between home and school environments can greatly aid in the security and progress of persons with autism.

While autism is a lifetime condition, with special training, supervision, and support, many adults with autism can live and work in the community.

◇ Resources ◇

Autism Research International Newsletter
Institute for Child Behavior Research
4182 Adams Avenue
San Diego, CA 92116

Journal of Autism and Developmental Disorders
Plenum Publishing Corporation
233 Spring Street
New York, NY 10013

Park, Clara, (1982) *The Siege*. Boston; Little Brown and Company.

Powers, Michael D. (Ed) (1989). *Children with Autism, A Parent's Guide*. Rockville, MD; Woodbine House.

Wing, L., M.D., (1980). *Autistic Children: A Guide for Parents and Professionals*. Secaucus, NJ: The Citadel Press.

◇ Organizations ◇

Autism Hotline
Autism Services Center
101 Richmond Street
Huntington, WV 25702
(304) 523-8269

Autism Society of America
8601 Georgia Avenue
Suite 503
Silver Spring, MD 20910
(301) 565-0433

Institute for Child Behavior Research
4182 Adams Avenue
San Diego, CA 92116
(618) 281-7165

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UPDATE 5/92

Fact Sheet Number 2 (FS2), 1993

NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

SpecialNet User Name: NICHCY •• SCAN User Name: NICHCY

General Information About
CEREBRAL PALSY

◇ Definition ◇

Cerebral palsy is a condition caused by damage to the brain, usually occurring before, during or shortly following birth. "Cerebral" refers to the brain and "palsy" to a disorder of movement or posture. It is neither progressive nor communicable. It is also not "curable" in the accepted sense, although education, therapy and applied technology can help persons with cerebral palsy lead productive lives. It is not a disease and should never be referred to as such. It can range from mild to severe.

The causes of cerebral palsy include illness during pregnancy, premature delivery, or lack of oxygen supply to the baby; or it may occur early in life as a result of an accident, lead poisoning, illness, child abuse, or other factors. Chief among the causes is an insufficient amount of oxygen reaching the fetal or newborn brain. The oxygen supply can be interrupted by premature separation of the placenta, an awkward birth position, labor that goes on too long or is too abrupt, or interference with the umbilical cord. Other causes may be associated with premature birth, RH or A-B-O blood type incompatibility between parents, infection of the mother with German measles or other viral diseases in early pregnancy, and microorganisms that attack the newborn's central nervous system. Lack of good prenatal care may also be a factor. A less common type is acquired cerebral palsy: head injury is the most frequent cause, usually the result of motor vehicle accidents, falls, or child abuse.

◇ Incidence ◇

Between 500,000 - 700,000 Americans have some degree of cerebral palsy. About 3,000 babies are born with the disorder each year, and another 500 or so acquire it in the early years of life.

◇ Characteristics ◇

There are three main types of cerebral palsy: spastic—stiff and difficult movement; athetoid—involuntary and uncontrolled movement; and ataxic—disturbed sense of balance and depth perception. There may be a combination of these types for any one individual. Other types do occur, although infrequently.

Cerebral palsy is characterized by an inability to fully control motor function. Depending on which part of the brain has been damaged and the degree of involvement of the central nervous system, one or more of the following may occur: spasms; tonal problems; involuntary movement; disturbance in gait and mobility; seizures; abnormal sensation and perception; impairment of sight, hearing or speech; and mental retardation.

◇ Developmental, Educational, and Employment Implications ◇

Early identification of cerebral palsy can lessen developmental problems and lead to appropriate intervention when it helps the most. Early intervention programs are family-centered in which professionals and families work together with the child in specific activities. Educators, physical and occupational therapists, social workers, speech-language pathologists, psychologists and physicians can assist families by providing information and education.

Activities for children with cerebral palsy may include:

- speech and language therapy;
- occupational therapy;
- physical therapy;
- medical intervention;
- family support services;
- early education; and
- applied technology.

As a child gets older and begins formal schooling, the intensity of services will vary from individual to individual. Persons with cerebral palsy are usually able to attain a substantial degree of independence but, in some cases, may need considerable assistance. Services for the school age child may include continuing therapy, regular or special education, counseling, technical support, community integration opportunities, recreation and possible personal attendants. A key factor seems to be a supportive family. Often people with extensive involvement can be highly functional and independent. The HEATH Resource Center, the clearinghouse for Higher Education and Adult Training for people with Handicaps, states that a significant number of students with cerebral palsy are enrolled in colleges and universities.

Important advances have taken place in the last 15 years which have had a great effect on the long-term well-being of children born with cerebral palsy. Advanced technology has been applied to the needs of persons with cerebral palsy, including computers and engineering devices. Technological innovations have been developed in the areas of speech and communication, self-care, and adapting living arrangements and work sites. The future may bring even more significant applications.

Another important development has been the increased ability of persons with disabilities, including those who have cerebral palsy and other severe disabilities, to live independently in the community. Independent living opportunities include group shared and supervised apartments, or living in the community with appropriate support services. Independent Living Centers have proven to be important resources for persons with disabilities.

◇ Resources ◇

Finnie, N.R. (1975). *Handling the Young Cerebral Palsied Child at Home*. New York, NY: E.P. Dutton and Co.

Schleichkorn, J. (1983). *Coping with Cerebral Palsy: Answers to Questions Parents Often Ask*. Austin, TX: PRO-ED, Inc.

Geralis, E. (1991). *Children with Cerebral Palsy, A Parent's Guide*. Rockville, MD: Woodbine House.

◇ Organizations ◇

American Academy for Cerebral Palsy and Developmental Medicine
1910 Byrd Avenue, Suite 100
P.O. Box 11086
Richmond, VA 23230-1086
(804) 282-0036 (For physician referral)

Independent Living Residential Utilization Project (ILRU)
The Institute for Rehabilitation and Research
2323 South Sheppard, Suite 1000
Houston, TX 77019
(713)520-0232; (713) 520-5136 (TDD)

National Easter Seal Society
70 East Lake Street
Chicago, IL 60601
(312) 726-6200; (312) 726-4258 (TDD)
(800) 221-6827 (Outside IL)

National Rehabilitation Information Center (NARIC)
8455 Colesville Road
Suite 935
Silver Spring, MD 20910-3319
(301) 588-9284 (TDD/Voice); (800) 346-2742

United Cerebral Palsy Associations, Inc.
7 Penn Plaza, Suite 804
New York, NY 10001
(212) 268-6655; (800) 872-1827

United Cerebral Palsy Associations, Inc.
1522 K Street, N.W., Suite 1112
Washington, D.C. 20005
(202) 842-1266; (800) 872-2827 (Affiliate Relations Dept.); (800) 872-5827 (Community Services and Governmental Activities Office)

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UPDATE 5/92

For more information contact NICHCY.

Fact Sheet Number 4 (FS4), 1993

NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About

DOWN SYNDROME

Definition

Down syndrome is the most common and readily identifiable chromosomal condition associated with mental retardation. It is caused by a chromosomal abnormality: for some unexplained reason, an accident in cell development results in 47 instead of the usual 46 chromosomes. This extra chromosome changes the orderly development of the body and brain. In most cases, the diagnosis of Down Syndrome is made according to results from a chromosome test administered shortly after birth.

Incidence

Approximately 4,000 children with Down Syndrome are born in the U.S. each year, or about 1 per 1,000 live births. Although parents of any age may have child with Down Syndrome, the incidence is higher for women over 35. Most common forms of the syndrome do not usually occur more than once in a family.

Characteristics

There are over 50 clinical signs of Down Syndrome, but it is rare to find all or even most of them in one person. Some common characteristics include:

- Poor muscle tone;
- Slanting eyes with folds of skin at the inner corners (called epicanthal folds);
- White ("Brushfield") spots in the iris of the eye;
- Short, broad hands with a single crease across the palm on one or both hands;
- Broad feet with short toes;
- Flat bridge of the nose;
- Short, low-set ears;
- Short neck;
- Small head;
- Small oral cavity; and/or
- Short, high-pitched cries in infancy.

Individuals with Down Syndrome are usually smaller than their non-disabled peers, and their physical as well as intellectual development is slower.

Besides having a distinct physical appearance, children with Down Syndrome frequently have specific health-related problems. A lowered resistance to infection makes these children more prone to respiratory problems. Visual problems such as crossed eyes and far- or nearsightedness are higher in those with Down Syndrome, as are mild to moderate hearing loss and speech difficulty.

Approximately one third of babies born with Down Syndrome have heart defects, most of which are now successfully correctable. Some individuals are born with gastrointestinal tract problems that can be surgically corrected.

Some people with Down Syndrome also may have a condition known as Atlantoaxial Instability, a misalignment of the top two vertebrae of the neck. This condition makes these individuals more prone to injury if they participate in activities which overextend or flex the neck. Parents are urged to have their child examined by a physician to determine whether or not their child should be restricted from sports and activities which place stress on the neck. Although this misalignment is a potentially serious condition, proper diagnosis can help prevent serious injury.

Children with Down Syndrome may have a tendency to become obese as they grow older. Besides having negative social implications, this weight gain threatens these individuals' health and longevity. A supervised diet and exercise program may help reduce this problem.

✧ Educational and Employment Implications ✧

Shortly after a diagnoses of Down Syndrome is confirmed, parents should be encouraged to enroll their child in an infant development/early intervention program. These programs offer parents special instruction in teaching their child language, cognitive, self-help, and social skills, and specific exercises for gross and fine motor development. Research has shown that stimulation during early developmental stages improves the child's chances of developing to his or her fullest potential. Continuing education, positive public attitudes, and a stimulating home environment have also been found to promote the child's overall development.

Just as in the normal population, there is a wide variation in mental abilities, behavior, and developmental progress in individuals with Down Syndrome. Their level of retardation may range from mild to severe, with the majority functioning in the mild to moderate range. Due to these individual differences, it is impossible to predict future achievements of children with Down Syndrome.

Because of the range of ability in children with Down Syndrome it is important for families and all members of the school's education team to place few limitations on potential capabilities. It may be effective to emphasize concrete concepts rather than abstract ideas. Teaching tasks in a step-by-step manner with frequent reinforcement and consistent feedback has been proven successful. Improved public acceptance of persons with disabilities along with increased opportunities for adults with disabilities to live and work independently in the community, have expanded goals for individuals with Down Syndrome. Independent Living Centers, group shared and supervised apartments and support services in the community have proven to be important resources for persons with disabilities.

✧ Resources ✧

National Down Syndrome Congress, *Down Syndrome*. 1985. Revised Pamphlet. (See address below.)

Stray-Gundersen, K. (1986). *Babies with Down Syndrome, A New Parent's Guide*. Rockville, MD: Woodbine House.

National Down Syndrome Society, *This Baby Needs You Even More*. (See address below.)

✧ Organizations ✧

National Down Syndrome Congress
1800 Dempster Street
Park Ridge, IL 60068-1146
(708) 823-7550
(1-800) 232-NDSC (Toll Free)

National Down Syndrome Society
666 Broadway
Suite 810
New York, NY 10012
(212) 460-9330
(1-800) 221-4602 (Toll Free)

The Arc (formerly the Association for Retarded Citizens of the United States)
500 East Border Street, Suite 300
Arlington, TX 76010
(817) 261-6003

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UPDATE 6/92

Fact Sheet Number 5 (FS5), 1993

NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About

EMOTIONAL DISTURBANCE

◇ Definition ◇

Many terms are used to denote emotional, behavioral or mental disorders. Currently these students are labeled Seriously Emotionally Disturbed; however, efforts to improve both the definition and label are being addressed to be more inclusive in identification and service delivery. In general, most people would agree that the terminology should indicate that students who are eligible for special services under this label have behavior that is significantly different from that of their peers.

Public Law 94-142, The Education of the Handicapped Act, currently defines Serious Emotional Disturbance as "a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree, which adversely affects educational performance:

- An inability to learn which cannot be explained by intellectual sensory, or health factors;
- An inability to build or maintain satisfactory interpersonal relationships with peers and teachers;
- A general pervasive mood of unhappiness or depression; or a tendency to develop physical symptoms or fears associated with personal or school problems." (U.S. Federal Register 42, August 23, 1977, pp. 42478-42479.)

The Federal definition (as stated in the Federal Register) includes children who have schizophrenia. Children who have been identified as socially maladjusted (except those determined to be Seriously Emotionally Disturbed) are excluded from this category.

◇ Incidence ◇

For the school year 1988-89, 377,295 children and youth with emotional or behavior disturbance were provided services in the public schools (Twelfth Annual Report to Congress U.S. Department of Education, 1990).

◇ Characteristics ◇

The causes of emotional disturbances have not been adequately determined. Although various factors such as heredity, brain disorder, diet, stress, and family functioning have been suggested as possible causes, research has not shown any of these factors to be the direct cause of behavior problems. Some of the characteristics and behaviors seen in children who have emotional disturbances include:

- Hyperactivity (short attention span, impulsiveness);
- Aggression/self-injurious behavior (acting out, fighting);
- Withdrawal (failure to initiate interaction with others; retreat from exchanges of social interaction, excessive fear or anxiety);
- Immaturity (inappropriate crying, temper tantrums, poor coping skills); and
- Learning problems (academically performing below grade level).

Children with the most serious emotional disturbances exhibit distorted thinking, excessive anxiety, bizarre motor acts, and abnormal mood swings and are sometimes identified as children who have a severe psychosis or schizophrenia.

Many children who do not have emotional disturbances may display some of these same behaviors at various times during their development. However, when children have serious emotional disturbances, these behaviors continue over long periods of time. Their behavior thus signals that they are not coping with their environment or peers.

◇ Educational Implications ◇

The educational programs for children with behavioral and/or emotional problems as identified by the schools should include attention to mastering academics, developing social skills, and increasing self-control and self-esteem. Career education (both vocational and academic programs) is rapidly becoming a major part of the secondary education of these children. It is recommended that career education be considered as a part of every adolescent's Individualized Education Program (IEP).

Behavior modification, shaping behaviors with positive reinforcement, is one of the most widely used approaches to helping children with emotional/behavioral disorders. However, while students can learn to meet classroom expectations, questions have been raised about how much the learning transfers to other situations.

Hence, a number of schools are trying different strategies to help students take responsibility for their thoughts, feelings and actions. It is important for teachers to focus on academics and opportunities for their students to develop social skills, in addition to working on behavioral control.

Students eligible for special education services under the category Seriously Emotionally Disturbed often have IEPs which do not include psychological or counseling services. These are legitimate related services found in the law (Code of Federal Regulations CFR 300.13). Often it is suggested that families take their child to a mental health center for therapy. However, an increasing number of state education and mental health agencies have reported collaborative efforts to make mental health services (particularly school-based mental health services) more available to identified students. Sometimes these services include short term therapy; but more often they are defined as consultations with teachers, work with families, and availability at crisis time. Recognition that families with the most seriously troubled children need support, respite care, intensive case management services, and a multi-agency treatment plan is growing, largely through a federal program called CASSP (Child and Adolescent Service System Program). These efforts work best when school and mental health professionals work collaboratively.

◇ Other Considerations ◇

Families of children with emotional disturbances may need help in understanding their children's condition and in learning how to work effectively with them. Help is available from psychiatrists, psychologists or other mental health professionals in public or private mental health settings. Sometimes children may need an out-of-home placement. Children should be provided services based on their individual needs and all persons who are involved with these children should be aware of the care they are receiving. It is important to coordinate all services between home, school, and therapeutic community with open communication.

◇ Resources ◇

Donner, R. and Fine, G. (1987) *A Guide for Developing Self-Help / Advocacy Groups for Parents of Children with Serious Emotional Problems.* Distributed by: CASSP Technical Assistance Center, 2233 Wisconsin Ave., N.W. #215 Washington, D.C. 20007

Friedman, R.M., Duchnowski, A.J. & Henderson, E.L., Eds. (1989). *Advocacy on Behalf of Children with Serious Emotional Problems.* Springfield, Illinois: Charles C. Thomas.

Kelker, K.A. (1988 2nd Ed.) *Taking Charge: A Handbook for Parents Whose Children Have Emotional Handicaps.* Distributed by: Research and Training Center on Family Support and Children's Mental Health, Portland Research Institute, Portland State University, P.O. Box 751, Portland, OR 97207-0751

Knitzer, J., Steinberg, Z. and Fleisch, B. (1990). *At the Schoolhouse Door: An Examination of Programs and Policies for Children with Behavioral and Emotional Problems.* New York: Bank Street College.

National Directory of Organizations Serving Parents of Children and Youth with Emotional and Behavioral Disorders. (1988 2nd Ed.) Distributed by: Research and Training Center on Family Support and Children's Mental Health See above address

◇ Organizations ◇

American Academy of Child and Adolescent Psychiatry
Public Information Office
3615 Wisconsin Ave., NW
Washington, DC 20016
(202) 966-7300

ERIC Clearinghouse on Handicapped and Gifted Children
Council for Exceptional Children
1920 Association Dr.
Reston, VA 22091-1589
(703) 620-3660

Federation of Families for Children's Mental Health
1021 Prince St.
3rd Floor
Alexandria, VA 22314-2971
(703) 684-7710

National Alliance for the Mentally Ill
2101 Wilson Blvd., Suite 302
Arlington, VA 22201
(703) 524-7600

National Clearinghouse on Family Support and Children's Mental Health
Portland State University
P.O. Box 751
Portland, OR 97207-0751
(800) 628-1696 between 8 a.m. and noon Pacific Time

National Mental Health Association
1021 Prince Street
Alexandria, VA 22314-2971
(703) 684-7722

For your state CASSP office and State Mental Health Representative for Children call NICHCY (1-800-999-5599) and ask for a *State Resource Sheet* for your state.

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UPDATE 7/90

For more information contact NICHCY.

Fact Sheet Number 6 (FS6), 1993

NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

SpecialNet User Name: NICHCY •• SCAN User Name: NICHCY

General Information About

EPILEPSY

◇ Definition ◇

According to the Epilepsy Foundation of America, epilepsy is a physical condition that occurs when there is a sudden, brief change in how the brain works. When brain cells are not working properly, a person's consciousness, movement, or actions may be altered for a short time. These physical changes are called epileptic seizures. Epilepsy is therefore sometimes called a seizure disorder. Epilepsy affects people in all nations and of all races.

Some people can experience a seizure and not have epilepsy. For example, many young children have convulsions from fevers. These febrile convulsions are one type of seizure. Other types of seizures not classified as epilepsy include those caused by an imbalance of body fluids or chemicals or by alcohol or drug withdrawal. A single seizure does not mean that the person has epilepsy.

◇ Incidence ◇

About two million Americans have epilepsy; of the 100,000 new cases that develop each year, three quarters of them are in children and adolescents.

◇ Characteristics ◇

Although the symptoms listed below are not necessarily indicators of epilepsy, it is wise to consult a doctor if you or a member of your family experiences one or more of them:

- "Blackouts" or periods of confused memory;
- Episodes of staring or unexplained periods of unresponsiveness;
- Involuntary movement of arms and legs;
- "Fainting spells" with incontinence or followed by excessive fatigue; or
- Odd sounds, distorted perceptions, episodic feelings of fear that cannot be explained.

Seizures can be generalized, meaning that all brain cells are involved. One type of generalized seizure consists of a convulsion with a complete loss of consciousness. Another type looks like a brief period of fixed staring.

Seizures are partial when those brain cells not working properly are limited to one part of the brain. Such partial seizures may cause periods of "automatic behavior" and altered consciousness. This is typified by purposeful-looking behavior, such as buttoning or unbuttoning a shirt. Such behavior, however, is unconscious, may be repetitive, and is usually not recalled.

◇ Educational Implications ◇

Students with epilepsy or seizure disorders are eligible for special education and related services under the Individuals with Disabilities Education Act (IDEA), formerly the Education of the Handicapped Act (Public Law 94-142). Epilepsy is classified as "other health impaired" and an Individualized Education Program (IEP) would be developed to specify appropriate services. Some students may have additional conditions such as learning disabilities along with the seizure disorders.

Seizures may interfere with the child's ability to learn. If the student has the type of seizure characterized by a brief period of fixed staring, he or she may be missing parts of what the teacher is saying. It is important that the teacher observe and document these episodes and report them promptly to parents and to school nurses.

Depending on the type of seizure or how often they occur, some children may need additional assistance to help them keep up with classmates. Assistance can include adaptations in classroom instruction, first aid instruction on seizure management to the student's teachers, and counseling, all of which should be written in the IEP.

It is important that the teachers and school staff be informed about the child's condition, possible effects of medication, and what to do in case a seizure occurs at school. Most parents find that a friendly conversation with the teacher(s) at the beginning of the school year is the best way to handle the situation. Even if a child has seizures that are largely controlled by medication, it is still best to notify the school staff about the condition.

School personnel and the family should work together to monitor the effectiveness of medication as well as any side effects. If a child's physical or intellectual skills seem to change, it is important to tell the doctor. There may also be associated hearing or perception problems caused by the brain changes. Written observations of both the family and school staff will be helpful in discussions with the child's doctor.

Children and youth with epilepsy must also deal with the psychological and social aspects of the condition. These include public misperceptions and fear of seizures, uncertain occurrence, loss of self control during the seizure episode, and compliance with medications. To help children feel more confident about themselves and accept their epilepsy, the school can assist by providing epilepsy education programs for staff and students, including information on seizure recognition and first aid.

Students can benefit the most when both the family and school are working together. There are many materials available for families and teachers so that they can understand how to work most effectively as a team.

◇ Resources ◇

Epilepsy Foundation of America. (1983). *Epilepsy: You and Your Child, Information for Parents.* Landover, MD: Epilepsy Foundation of America.

Freeman, John M., Vining, Eileen, P.G., Pillas, Diana J. (1990). *Seizures and Epilepsy in Childhood: A Guide for Parents.* Baltimore, MD: The Johns Hopkins University Press. (Telephone: 800-537-5487.)

Kobrin, Eileen R. (1991). *Issues and Answers: A Guide for Parents of Teens and Young Adults with Epilepsy.* Landover, MD: Epilepsy Foundation of America. (Telephone: 800-EFA-1000.)

Reisner, H. (Ed.). (1988). *Children with Epilepsy: A Parent's Guide.* Kensington, MD: Woodbine House. (Telephone: 301-468-8800 (in D.C.); 800-843-7323.)

◇ Organizations ◇

Epilepsy Foundation of America (EFA)
4351 Garden City Drive, Suite 406
Landover, MD 20785
(301) 459-3700; (800) EFA-1000 (Toll Free)

National Institute of Neurological Disorders and Stroke (NINDS)
National Institutes of Health
Building 31, Room 8A06
9000 Rockville Pike
Bethesda, MD 20892
(301) 496-5751

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NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About

LEARNING DISABILITIES

◇ Definition ◇

The regulations for Public Law (P.L.) 101-476, the Individuals with Disabilities Education Act (IDEA), formerly P.L. 94-142, the Education of the Handicapped Act (EHA), define a learning disability as a "disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations."

The Federal definition further states that learning disabilities include "such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia." According to the law, learning disabilities do not include learning problems that are primarily the result of visual, hearing, or motor disabilities; mental retardation; or environmental, cultural, or economic disadvantage. Definitions of learning disabilities also vary among states.

Having a single term to describe this category of children with disabilities reduces some of the confusion, but there are many conflicting theories about what causes learning disabilities and how many there are. The label "learning disabilities" is all-embracing; it describes a syndrome, not a specific child with specific problems. The definition assists in classifying children, not teaching them. Parents and teachers need to concentrate on the individual child. They need to observe both how and how well the child performs, to assess strengths and weaknesses, and invent ways to help each child learn. It is important to remember that there is a high degree of interrelationship and overlapping among the areas of learning. Therefore, children with learning disabilities may exhibit a combination of characteristics.

These problems may mildly, moderately, or severely impair the learning process.

◇ Incidence ◇

Many different estimates of the number of children with learning disabilities have appeared in the literature (ranging from 1% to 30% of the general population). In 1987, the Interagency Committee on Learning Disabilities concluded that 5% to 10% is a reasonable estimate of the percentage of persons affected by learning disabilities. The U.S. Department of Education (1991) reported that 4.66% of all school aged children received special education services for learning disabilities and that in the 1989-90 school year over 2 million children with learning disabilities were served. Differences in estimates perhaps reflect variations in the definition.

◇ Characteristics ◇

Learning disabilities are characterized by a significant difference in the child's achievement in some areas, as compared to his or her overall intelligence.

Students who have learning disabilities may exhibit a wide range of traits, including problems with reading comprehension, spoken language, writing, or reasoning ability. Hyperactivity, in-attention, and perceptual coordination problems may also be associated with learning disabilities. Other traits that may be present include a variety of symptoms, such as uneven and unpredictable test performance, perceptual impairments, motor disorders, and behaviors such as impulsiveness, low tolerance for fustruation, and problems in handling day-to-day social interactions and situations.

Learning disabilities may occur in the following academic areas:

1. Spoken language: Delays, disorders, or discrepancies in listening and speaking;
2. Written language: Difficulties with reading, writing, and spelling;
3. Arithmetic: Difficulty in performing arithmetic functions or in comprehending basic concepts;

4. Reasoning: Difficulty in organizing and integrating thoughts; and
5. Organization skills: Difficulty in organizing all facets of learning.

◆ Educational Implications ◆

Because learning disabilities are manifested in a variety of behavior patterns, the Individual Education Program (IEP) must be designed carefully. A team approach is important for educating the child with a learning disability, beginning with the assessment process and continuing through the development of the IEP. Close collaboration among special class teachers, parents, resource room teachers, regular class teachers and others, will facilitate the overall development of a child with learning disabilities.

Some teachers report that the following strategies have been effective with some students who have learning disabilities:

- Capitalize on student's strengths;
- High structure and clear expectations;
- Using short sentences and a simple vocabulary;
- Opportunities for success in a supportive atmosphere to help build self-esteem;
- Flexibility in classroom procedures (e.g., allowing the use of tape recorders for note-taking and test-taking when students have trouble with written language);
- Self-correcting materials, which provide immediate feedback without embarrassment;
- Using computers for drill and practice and teaching word processing;
- Positive reinforcement of appropriate social skills at school and home; and
- Recognizing that students with learning disabilities can greatly benefit from the gift of time to grow and mature.

◆ Resources ◆

"Journal of Learning Disabilities." (Available from PRO-ED, 5341 Industrial Oaks Blvd., Austin TX 78735-8809. Telephone: (512) 982-3142)

Silver, L. (1988). *The misunderstood child: A guide for parents of learning disabled children.* New York, NY: McGraw Hill Book Co. (Available from McGraw Hill, 11 West 19th St., New York, NY 10011.)

Smith, S. (1981). *No easy answers.* New York, NY: Bantam Books. (Available from Bantam, 666 Fifth Avenue, New York, NY 10103. Telephone: 1-800-223-6834.)

◆ Organizations ◆

Council for Learning Disabilities (CLD)
P.O. Box 40303
Overland Park, KS 66204
(913) 492-8755

Division of Learning Disabilities
Council for Exceptional Children
1920 Association Dr.
Reston, VA 22091
(703) 620-3660

Learning Disabilities Assn. of America (LDA)
4156 Library Road
Pittsburgh, PA 15234
(412) 341-1515
(412) 341-8077

National Center for Learning Disabilities
99 Park Avenue
New York, NY 10016
(212) 687-7211

National Network of Learning Disabled Adults (NNLDA)
808 North 82nd St., #F2
Scottsdale, AZ 85257
(602) 941-5112

Orton Dyslexia Society
Chester Building, Suite 382
8600 LaSalle Road
Baltimore, MD 21204
(410) 296-0232
(800) 222-3123 (Toll Free)

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NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

SpecialNet User Name: NICHCY •• SCAN User Name: NICHCY

General Information About

MENTAL RETARDATION

◇ Definition ◇

People with mental retardation are those who develop at a below average rate and experience difficulty in learning and social adjustment. The regulations for the Individuals with Disabilities Education Act (IDEA), formerly the Education of the Handicapped Act (Public Law 94-142), provide the following technical definition for mental retardation:

> "Mentally retarded means significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior and manifested during the developmental period, which adversely affects a child's educational performance."

"General intellectual functioning" refers to a score obtained on an intelligence test. Persons with mental retardation usually score 70 or below. "Adaptive behavior" refers to a person's adjustment to everyday life. Difficulties may occur in learning, communication, social, academic, vocational, and independent living skills.

Mental retardation is not a disease, nor should it be confused with mental illness. Children with mental retardation become adults; they do not remain "eternal children." They do learn, but slowly, and with difficulty.

Probably the greatest number of children with mental retardation have chromosome abnormalities. Other biological factors include (but are not limited to): asphyxia (lack of oxygen); blood incompatibilities between the mother and fetus; and maternal infections, such as rubella or herpes. Certain drugs have also been linked to problems in fetal development.

◇ Incidence ◇

Some studies suggest that approximately 1% of the general population has mental retardation (when both intelligence and adaptive behavior measures are used). According to data reported to the U.S. Department of Education by the states, in the 1989-90 school year, 564,666 students ages 6-21 were classified as having mental retardation and were provided services by the public schools. This figure represents approximately 1.7% of the total school enrollment for that year. It does not include students reported as having multiple handicaps or those in noncategorical special education pre-school programs who may also have mental retardation.

◇ Characteristics ◇

Many authorities agree that people with mental retardation develop in the same way as people with out mental retardation, but at a slower rate. Others suggest that persons with mental retardation have difficulties in particular areas of basic thinking and learning such as attention, perception, or memory. Depending on the extent of the impairment—mild, moderate, severe, or profound—individuals with mental retardation will develop differently in academic, social, and vocational skills.

◇ Educational Implications ◇

Persons with mental retardation have the capacity to learn, to develop, and to grow. The great majority of these citizens can become productive and full participants in society.

Appropriate educational services that begin in infancy and continue throughout the developmental period and beyond will enable children with mental retardation to develop to their fullest potential.

As with all education, modifying instruction to meet individual needs is the starting point for successful learning. Throughout their child's education, parents should be an integral part of the planning and teaching team.

In teaching persons with mental retardation, it is important to:

- Use concrete materials that are interesting, age-appropriate and relevant to the students;
- Present information and instructions in small, sequential steps and review each step frequently;
- Provide prompt and consistent feedback;
- Teach these children, whenever possible, in the same school they would attend if they were not mentally retarded;
- Stress success;
- Teach tasks or skills that students will use frequently in such a way that students can apply the tasks or skills in settings outside of school; and
- Remember that tasks that many people learn without instruction may need to be structured, or broken down into small steps or segments, with each step being carefully taught.

Children and adults with mental retardation need the same basic services that all people need for normal development. These include education, vocational preparation, health services, recreational opportunities, and many more. In addition, many persons with mental retardation need specialized services for special needs. Such services include diagnostic and evaluation centers; special early education opportunities, beginning with infant stimulation programs and continuing through preschool; and educational programs that include age-appropriate activities, functional academics, transition training, and opportunities for independent living and competitive employment to the maximum extent possible.

◇ Resources ◇

Cegelka, P.T. and Prehm, H.J. *Mental Retardation: From Categories to People*. (Merrill Publishing Co., Columbus, OH)

Cougan, T., and Isbell, L. *We Have Been There: Families Share the Joy and Struggles of Living with Mental Retardation*. 1983. (Abingdon Press, Nashville, TN)

Perske, R. *Hope for the Families: New Directions for Parents of Persons with Retardation and Other Disabilities*. (Abingdon Press—see above.)

◇ Organizations ◇

The Arc, (formerly the Association for Retarded Citizens of the United States)
500 East Border Street, Suite 300
Arlington, TX 76010
(817) 261-6003

American Association on Mental Retardation (AAMR)
1719 Kalorama Road, N.W.
Washington, D.C. 20009
(202) 387-1968; (1-800) 424-3688 (Toll Free)

National Down Syndrome Congress
1800 Dempster Street
Park Ridge, IL 60068-1146
(312) 823-7550; (1-800) 232-NDSC (Toll Free)

National Down Syndrome Society
666 Broadway, Suite 810
New York, NY 10012
(212) 460-9330; (1-800) 221-4602 (Toll Free)

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NICHCY

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P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About

PHYSICAL DISABILITIES AND SPECIAL HEALTH PROBLEMS

✧ Definition ✧

Orthopedic or physical disabilities describe medical or structural conditions which may be serious enough to disrupt the child's development and require special attention in school. Typical examples of orthopedic or physical problems include disabilities present at birth (such as missing limbs, spina bifida, etc.), as well as physical problems resulting from other causes (such as contractures caused by burns or fractures, etc.). In addition, neurological problems, such as cerebral palsy, may be included in this category.

Health impairments may result in limited strength, vitality and/or alertness. Asthma, cardiac conditions, sickle cell anemia, epilepsy, and leukemia are examples of health impairments that could interfere with a child's education.

✧ Incidence ✧

One half of one percent (.5%) is the figure usually cited in estimates of school aged children with physical or health impairments. Cerebral palsy accounts for a large part of this percentage, followed by spina bifida.

✧ Characteristics ✧

Physical disabilities can produce a variety of characteristics. Children may experience a wide range of restrictions on their activity, from little or none to a complete restructuring of daily life. The most severly affected children may require intensive medical and educational help.

Physical problems may interfere with children's motor functioning, communication, learning skills, or social development.

✧ Educational Implications ✧

The contributions of such related services as physical, occupational, and speech and language therapy are often central to the education of children with physical disabilities. The greatest progress is achieved when therapy suggestions are consistently applied in the child's home as well as in school. This carryover strengthens appropriate feeding, positioning, and language stimulation patterns.

Architectural factors must be considered. Section 504 of the Rehabilitation Act of 1973 requires that programs receiving Federal funds make their programs accesible. This could mean structural changes (for example, adding elevators or ramps) or schedule or location changes (for example, offering a course on the ground floor).

Sometimes the nature of the child's disability requires changes in school equipment or curriculum. In the same way a student's placement should be the least restrictive one appropriate for him or her, the day-to-day school pattern also should be as "normal" as possible.

Physical disabilities can have profound effects on children's emotional and social development. To promote growth, parents and teachers should avoid overprotection and encourage children to take risks within limits of safety and health. Teachers and classmates should also understand that, although children with physical disabilities and health impairments may be physically disabled, they are more like their classmates than different from them.

Technology holds great promise for making the life of a child with a disability more "normal." Computerized devices, for example, can help nonvocal, severely physically involved children communicate, perhaps for the first time.

Students who require recurring or longterm hospital care for their condition may need special services such as tutoring or homebound instruction to keep up with their class. Depending upon the nature and severity of the condition, counseling for the entire family may be helpful.

✧ References ✧

Best, G.A. *Individuals with Physical Disabilities.* 1978. (C.V. Mosby Co., 11830 Westline Industrial Drive, St. Louis, MO 63141)

Bigge, J.L. *Teaching Individuals with Physical and Multiple Disabilities.* 1982. (Charles E. Merrill Publishing Co., Columbus, OH 43216)

Birch, J.W., & Reynolds, M.C. *Teaching Exceptional Children in All America's Schools.* 1981. (The Council for Exceptional Children, 1920 Association Drive, Reston, VA 22091)

Calhoun, M.L., & Hawisher, M. *Teaching and Learning Strategies for Physically Handicapped Students.* 1979. (University Park Press, 233 E. Redwood Street, Baltimore, MD 21202)

Darling, R.B., & Darling, J. *Children Who Are Different. Meeting the Challenges of Birth Defects in Society.* 1982. (C.V. Mosby Co., 11830 Westline Industrial Drive, St. Louis, MO 63121)

Epilepsy Foundation of America. *Epilepsy: You and Your Child.* 1980. (Epilepsy Foundation of America, 4351 Garden City Drive, Suite 406, Landover, MD 20785)

National Rehabilitation Information Center. *Learning to Live with a Disability: A Guidebook for Families.* 1980. (National Rehabilitation Information Center, 4407 8th Street, N.E., Washington, DC 20017)

McCollum, A.T. *Coping with Prolonged Health Impairment in Your Child.* 1975. (Little, Brown & Co., 34 Beacon Street, Boston, MA 02106)

Mullins, J. B. *A Teacher's Guide to Management of Physically Handicapped Students.* 1979. (Charles C. Thomas Publisher, 2600 So. First Street, Springfield, IL 62717)

Prensky, A.L. & Pulkes, H.S. *Care of the Neurologically Handicapped Child. A Book for Parents and Professionals.* 1982. (Oxford University Press, 200 Madison Avenue, New York, NY 10016)

Umbreit, J., & Cardullas, P.(Eds.) *Educating the Severely Physically Handicapped.* 1980. (Special Press, P.O. Box 2524, Columbus, OH 43216)

✧ Resources ✧

Accent on Information
P.O. Box 700
Gillum Road and High Drive
Bloomington, IN 61701

American National Standards Institute
1430 Broadway
New York, NY 10018
(212) 354-3300

American Coalition of Citizens with Disabilities
1346 Connecticut Avenue, N.W.
Washington, DC 20036
(202) 785-4265

Cancer Information Clearinghouse
National Cancer Institute
Bethesda, MD 20205
(301) 496-4070

The Candlelighters Foundation
2025 I Street, N.W. - Suite 1011
Washington, DC 20006
(202) 659-5136

Division on Physically Handicapped
c/o The Council for Exceptional Children
1920 Association Drive
Reston, VA 22091

Epilepsy Foundation of America
4351 Garden City Drive, Suite 406
Landover, MD 20785
(301) 459-3700

March of Dimes Birth Defects Foundation
P.O. Box 2000, 1275 Mamaroneck Avenue
White Plains, NY 10605
(914) 428-7100

National Association of the Physically Handicapped
76 Elm Street
London, OH 43140
(614) 852-1664

National Easter Seal Society
70 East Lake Street
Chicago, IL 60601
(312) 726-6200, (800) 221-6827

National Library Service for the Blind and Physically Handicapped
Library of Congress
Washington, DC 20542
(202) 707-5100

National Rehabilitation Information Center
4407 8th Street, N.E.
Washington, DC 20017

United Cerebral Palsy Association, Inc.
1522 K Street, N.W., Suite 1112
Washington, DC 20005
(202) 842-1266, (800) 822-5827

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UPDATE 2/90

For more information contact NICHCY.

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NICHCY

National Information Center for Children and Youth with Disabilities
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General Information About

SEVERE AND/OR MULTIPLE DISABILITIES

✧ Definition ✧

People with severe disabilities are those who traditionally have been labeled as having severe or profound mental retardation. These people require ongoing extensive support in more than one major life activity in order to participate in integrated community settings and enjoy the quality of life available to people with fewer or no disabilities; they frequently have additional disabilities, including movement difficulties, sensory losses and behavior problems.

✧ Incidence ✧

In the 1986-1987 school year, the states reported to the U.S. Department of Education that they were providing services to 98,965 students with multiple disabilities. This number represents .14 percent of the school enrollment.

✧ Characteristics ✧

People with severe or multiple disabilities may exhibit a wide range of characteristics, depending on the combination and severity of disabilities, and the person's age. There are, however, some traits they may share, including:

- Limited speech or communication;
- Difficulty in basic physical mobility;
- Tendency to forget skills through disuse;
- Trouble generalizing skills from one situation to another; and
- A need for support in major life activities, e.g., domestic, leisure, community use, vocational.

✧ Medical Implications ✧

A variety of medical problems may accompany severe disabilities. Examples include seizures, cerebral palsy, sensory loss, hydrocephalus, and scoliosis. These conditions should be considered when establishing services. A multi-disciplinary team consisting of the student's parents, educational specialists and medical specialists in the areas in which the individual demonstrates problems should work together to plan and coordinate necessary services.

✧ Educational Implications ✧

In the past, students with severe and/or multiple disabilities were routinely excluded from public schools. Since the implementation of Public Law 94-142, (The Education of the Handicapped Act), public schools now serve large numbers of students with severe and/or multiple disabilities. Educational programming is likely to begin as early as infancy. At that time, as well as later on, the primary focus is upon increasing the child's independence.

In order to be effective, educational programs need to incorporate a variety of components to meet the considerable needs of individuals with severe and/or multiple disabilities. Programs should access needs in four major areas: domestic, leisure/recreational, community and vocational. These assessments enable the identification of functional objectives (objectives which will result in the learner's increased skill and independence in dealing with the routine activities of his/her life). Instruction should include: Expression of choice; communication; functional skill development; and age-appropriate social skills training.

Related services are of great importance, and the multidisciplinary approach is crucial. Appropriate people such as speech and language therapists, physical and occupational therapists, and medical specialists need to work closely with classroom teachers and parents. Because of problems with skill generalization, related services are best offered during the natural routine in the school and community rather than removing a student from class for isolated therapy.

Frequently, classroom arrangements must take into consideration students' needs for medications, special diets, or special equipment. Adaptive aids and equipment enable students to increase their range of functioning. For example, in recent years computers have become effective communication devices. Other aides include: wheelchairs, typewriters, headsticks (head gear), clamps, modified handles on cups and silverware, and communication boards. Computerized communication equipment and specially built vocational equipment also play important roles in adapting working environments for people with serious movement limitations.

Integration with nondisabled peers is another important component of the educational setting. Attending the same school and participating in the same activities as their nondisabled peers is crucial to the development of social skills and friendships for people with severe disabilities. Integration also benefits nondisabled peers and professionals through positive attitude change.

Beginning as early as the elementary school years, community-based instruction is an important characteristic of educational programming. In order to increase the student's ability to generalize (transfer) skills to appropriate situations, this type of instruction takes place in the actual setting where the skills will be used. As students grow older, increasing time is spent in the community; high school students may spend as much as 90 percent of their day there. Programs should draw on existing adult services in the community, including group homes, vocational programs and recreational settings.

In light of the current Vocational Rehabilitation Act and the practice of supported employment, schools are now using school-to-work transition planning and working toward job placement in integrated, competitive settings rather than sheltered employment and day activity centers.

◆ Resources ◆

Ludlow, B., Turnbull, A. & Lukasson, R. (1988). *Transitions to Adult Life for People with Mental Retardation - Principles and Practices.* Baltimore, MD: Paul H. Brookes.

Orelove, F. & Sobsey, D. (1987). *Educating Children with Multiple Disabilities: A Transdisciplinary Approach.* Baltimore, MD: Paul H. Brookes.

Snell, M.E. (Ed.) (1987). *Systematic Instruction of Persons with Severe Handicaps.* (3rd ed.) Columbus, OH: Merrill.

Wehman, P., Moon, M.S., Everson, J.M., Wood, W. & Barcus, J.M. (1988). *Transition from School to Work: New Challenges for Youth with Severe Disabilities.* Baltimore, MD: Paul H. Brookes.

◆ Organizations ◆

Association for Persons with Severe Handicaps, The (TASH)
11201 Greenwood Ave. North
Seattle, WA 98133
206-361-8770

National Rehabilitation Information Center (NARIC)
8455 Colesville Road, Suite 935
Silver Spring, MD 20910-3319
301-588-9284
800-346-2742 (Toll Free)

United Cerebral Palsy Associations, Inc.
7 Penn Plaza, Suite 804
New York, NY 10001
212-268-5962
800-872-1827 (Toll Free)

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NICHCY
National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About

SPEECH AND LANGUAGE DISORDERS

✧ Definition ✧

Speech and language disorders refer to problems in communication and related areas such as oral motor function. These delays and disorders range from simple sound substitutions to the inability to understand or use language or use the oral-motor mechanism for functional speech and feeding. Some causes of speech and language disorders include hearing loss, neurological disorders, brain injury, mental retardation, drug abuse, physical impairments such as cleft lip or palate, and vocal abuse or misuse. Frequently, however, the cause is unknown.

✧ Incidence ✧

One quarter of the students served in the public schools' special education programs (almost 1 million children in the 1988-89 school year) were categorized as speech or language impaired. This estimate does not include children who have speech/language problems secondary to other conditions such as deafness. Language disorders may be related to other disabilities such as mental retardation, autism or cerebral palsy. It is estimated that communication disorders (including speech, language and hearing disorders) affect one of every 10 people in the United States.

✧ Characteristics ✧

A child's communication is considered delayed when the child is noticeably behind his or her peers in the acquisition of speech and/or language skills. Sometimes a child will have greater receptive (understanding) than expressive (speaking) language skills, but this is not always the case.

Speech disorders refer to difficulties producing speech sounds or problems with voice quality. They might be characterized by an interruption in the flow or rhythm of speech, such as stuttering, which is called dysfluency. Speech disorders may be problems with the way sounds are formed, called articulation or phonological disorders, or they may be difficulties with the pitch, volume or quality of the voice. There may be a combination of several problems. People with speech disorders have trouble using some speech sounds, which can also be a symptom of a delay. They may say "see" when they mean "ski" or they may have trouble using other sounds like "l" or "r". Listeners may have trouble understanding what someone with a speech disorder is trying to say. People with voice disorders may have trouble with the way their voices sound.

A language disorder is an impairment in the ability to understand and/or use words in context, both verbally and nonverbally. Some characteristics of language disorders include improper use of words and their meanings, inability to express ideas, inappropriate grammatical patterns, reduced vocabulary and inability to follow directions. One or a combination of these characteristics may occur in children who are affected by language learning disabilities or developmental language delay. Children may hear or see a word but not be able to understand its meaning. They may have trouble getting others to understand what they are trying to communicate.

✧ Educational Implications ✧

Because all communication disorders carry the potential to isolate individuals from their social and educational surroundings, it is essential to find appropriate timely intervention. While many speech and language patterns can be called "baby talk" and are part of a young child's normal development, they can become problems if they are not outgrown as expected. In this way an initial delay in speech and language or an initial speech pattern can become a disorder which can cause difficulties in learning. Because of the way the brain develops, it is easier to learn language and communication skills before the age of 5. When children have muscular disorders, hearing problems or developmental delays, their acquisition of speech, language and related skills is often affected.

Speech-language pathologists assist children who have communication disorders in various ways. They provide individual therapy for the child; consult with the child's teacher about the most effective ways to facilitate the child's communication in the class setting; and work closely with the family to develop goals and techniques for effective therapy in class and at home. Technology can help children whose physical conditions make communication difficult. The use of electronic communication systems allow nonspeaking people and people with severe physical disabilities to engage in the give and take of shared thought.

Vocabulary and concept growth continues during the years children are in school. Reading and writing are taught and, as students get older, the understanding and use of language becomes more complex. Communication skills are at the heart of the education experience. Speech and/or language therapy may continue throughout a student's school year either in the form of direct therapy or on a consultant basis. The speech-language pathologist may assist vocational teachers and counselors in establishing communication goals related to the work experiences of students and suggest strategies that are effective for the important transition from school to employment and adult life.

Communication has many components. All serve to increase the way people learn about the world around them, utilize knowledge and skills, and interact with colleagues, family and friends.

◇ Resources ◇

Bernthal, J.E. & Bankson, N.W. (1988). *Articulation and Phonological Disorders*. 2nd ed. Englewood Cliffs, NJ: Prentice Hall.

Hixon, T.J., Shriberg, L.D. & Saxman, J.H. (1980). *Introduction to Communication Disorders*. Englewood Cliffs, NJ: Prentice Hall.

Shames, G.H. & Wiig, E.H. (1982). *Human Communication Disorders. An Introduction*. Columbus, OH: Charles & Merrill Publishing Co.

Van Hattum, R.J. (1980). *Communication Disorders: An Introduction*. New York: Macmillan.

◇ Organizations ◇

American Cleft Palate Association
331 Salk Hall
University of Pittsburgh
Pittsburgh, PA 15261
412-681-9620

American Speech-Language-Hearing Association (ASHA)
10801 Rockville Pike
Rockville, MD 20852
301-897-5700 (Voice or TDD)
800-638-8255

Learning Disabilities Association of America (LDA)
4156 Library Road
Pittsburgh, PA 15234
412-341-1515
412-341-8077

Division for Children with Communication Disorders
c/o Council for Exceptional Children (CEC)
1920 Association Drive
Reston, VA 22091
703-620-3660

National Easter Seal Society
70 East Lake Street
Chicago, IL 60601
312-726-6200
312-726-4258 (TDD)
800-221-6827 (Calls outside IL)
(For information about services for children and youth.)

Scottish Rite Foundation
Southern Jurisdiction, U.S.A., Inc.
1733 Sixteenth Street, N.W.
Washington, DC 20009-3199
202-232-3579

Trace Research and Development Center on Communication, Control and Computer Access for Handicapped Individuals
University of Wisconsin - Madison
S-151 Waisman Center
Madison, WI 53705-2280
608-262-6966; 608-263-5408 (TDD)

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For more information contact NICHCY.

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NICHCY

National Information Center for Children and Youth with Disabilities
P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About

SPINA BIFIDA

◇ Definition ◇

Spina Bifida means cleft spine, which is an incomplete closure in the spinal column. In general, the three types of spina bifida (from mild to severe) are:

1. **Spina Bifida Occulta:** There is an opening in one or more of the vertebrae (bones) of the spinal column without apparent damage to the spinal cord.

2. **Meningocele:** The meninges, or protective covering around the spinal cord, has pushed out through the opening in the vertebrae in a sac called the "meningocele." However, the spinal cord remains intact. This form can be repaired with little or no damage to the nerve pathways.

3. **Myelomeningocele:** This is the most severe form of spina bifida, in which a portion of the spinal cord itself protrudes through the back. In some cases, sacs are covered with skin; in others, tissue and nerves are exposed. Generally, people use the terms "spina bifida" and "myelomeningocele" interchangeably.

◇ Incidence ◇

Approximately 40% of all Americans may have spina bifida occulta, but because they experience little or no symptoms, very few of them ever know that they have it. The other two types of spina bifida, meningocele and myelomeningocele, are known collectively as "spina bifida manifesta," and occur in approximately one out of every thousand births. Of these infants born with "spina bifida manifesta," about 4% have the meningocele form, while about 96% have myelomeningocele form.

◇ Characteristics ◇

The effects of myelomeningocele, the most serious form of spina bifida, may include muscle weakness or paralysis below the area of the spine where the incomplete closure (or cleft) occurs, loss of sensation below the cleft, and loss of bowel and bladder control. In addition, fluid may build up and cause an accumulation of fluid in the brain (a condition known as hydrocephalus). A large percentage (70%-90%) of children born with myelomeningocele have hydrocephalus. Hydrocephalus is controlled by a surgical procedure called "shunting," which relieves the fluid buildup in the brain. Hydrocephalus may occur without spina bifida, but the two conditions often occur together. If a drain (shunt) is not implanted, the pressure buildup can cause brain damage, seizures or blindness.

◇ Educational Implications ◇

Although spina bifida is relatively common, until recently most children born with a myelomeningocele died shortly after birth. Now that surgery to drain spinal fluid and protect children against hydrocephalus can be performed in the first 48 hours of life, children with myelomeningocele are much more likely to live. Quite often, however, they must have a series of operations throughout their childhood. School programs should be flexible to accommodate these special needs.

Many children with myelomeningocele need training to learn to manage their bowel and bladder functions. Some require catheterization, or the insertion of a tube to permit passage of urine.

The courts have held that clean, intermittent catheterization is necessary to help the child benefit from and have access to special education and related services. Many children learn to catheterize themselves at a very early age.

A successful bladder management program can be incorporated into the regular school day.

In some cases, children with spina bifida who also have a history of hydrocephalus experience learning problems. They may have difficulty with paying attention, expressing or understanding language, and grasping reading and math. Early intervention with children who experience learning problems can help considerably to prepare them for school.

Mainstreaming, or successful integration of a child with spina bifida into a school attended by nondisabled young people, sometimes requires changes in school equipment or the curriculum. Although student placement should be in the least restrictive environment the day-to-day school pattern also should be as "normal" as possible. In adapting the school setting for the child with spina bifida, architectural factors should be considered. Section 504 of the Rehabilitation Act of 1973 requires that programs receiving federal funds make their facilities accessible. This can occur through structural changes (for example, adding elevators or ramps) or through schedule or location changes (for example, offering a course on the ground floor).

Children with myelomeningocele need to learn mobility skills, and often require the aid of crutches, braces, or wheelchairs. It is important that all members of the school team and the parents understand the child's physical capabilities and limitations. Physical disabilities like spina bifida can have profound effects on a child's emotional and social development. To promote personal growth, families and teachers should encourage children, within the limits of safety and health, to be independent and to participate in activities with their nondisabled classmates.

◇ Resources ◇

National Institute of Neurological and Communicative Disorders and Stroke. 1986. *Spina Bifida: Hope Through Research.* (Available from the Spina Bifida Association of America. See address under organizations.)

G. (Ed.) *Children with Spina Bifida: Early Intervention and Preschool Programming.* 1987. (Paul H. Brookes Publishing Co., Baltimore, MD)

◇ Organizations ◇

Spina Bifida Association of America
4590 MacArthur Boulevard, Suite 250
Washington, D.C. 20007
(202) 944-3285
(1-800) 621-3141 (Toll Free)

March of Dimes Birth Defects Foundation
1275 Mamaroneck Avenue
White Plains, NY 10605
(914) 428-7100

National Center for Education in Maternal and Child Health
38th and R Streets, N.W.
Washington, D.C. 20057
(202) 625-8400

National Easter Seal Society
70 E. Lake Street
Chicago, IL 60601
(312) 726-6200
(1-800) 221-6827 (Toll Free)

National Rehabilitation Information Center (NARIC)
8455 Colesville Road, Suite 935
Silver Spring, MD 20910-3319
(301) 588-9284
(1-800) 346-2742 (Toll Free)

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UPDATE 3/90

For more information contact NICHCY.

NICHCY

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P.O. Box 1492, Washington, D.C. 20013-1492

*SpecialNet User Name: NICHCY ** SCAN User Name: NICHCY*

General Information About
VISUAL IMPAIRMENTS

✧ Definition ✧

The terms partially sighted, low vision, legally blind and totally blind are used in the educational context to describe students with visual impairments. They are defined as follows:

- "Partially sighted" indicates some type of visual problem has resulted in a need for special education;
- "Low vision" generally refers to a severe visual impairment, not necessarily limited to distance vision. Low vision applies to all individuals with sight who are unable to read the newspaper at a normal viewing distance, even with the aid of eyeglasses or contact lenses. They use a combination of vision and other senses to learn, although they may require adaptations in lighting or the size of print, and, sometimes, braille;
- "Legally blind" indicates that a person has less than 20/200 vision in the better eye or a very limited field of vision (20 degrees at its widest point); and
- Totally blind students learn via braille or other non-visual media.

Visual impairment is the consequence of a functional loss of vision, rather than the eye disorder itself. Eye disorders which can lead to visual impairments can include retinal degeneration, albinism, cataracts, glaucoma, muscular problems that result in visual disturbances, corneal disorders, diabetic retinopathy, congenital disorders and infection.

✧ Incidence ✧

The rate at which visual impairments occur in individuals under the age of 18 is 12.2 per 1,000. Severe visual impairments, (legally or totally blind) occur at a rate of .06 per 1,000.

✧ Characteristics ✧

The effect of visual problems on a child's development depends on the severity, type of loss, age at which the condition appears, and overall functioning level of the child. Many children who have multiple handicaps may also have visual impairments resulting in motor, congnitive and/or social developmental delays.

A young child with visual handicaps has little reason to explore interesting objects in the environment, and thus may miss opportunities to have experiences and to learn. This lack of exploration may continue until learning becomes motivating or until intervention begins.

Because the child cannot see parents or peers, he or she may be unable to imitate social behavior or understand nonverbal cues. Visual handicaps can create obstacles to a growing child's independence.

✧ Educational Implications ✧

Children with visual impairments should be assessed early to benefit from early intervention programs, when applicable. Technology in the form of computers, low-vision optical and video aids enable many partially sighted, low vision and blind children to participate in regular class activities. Large print materials, books on tape and braille books are available.

Students with visual impairments may need additional help with special equipment and modifications in the regular curriculum to emphasize listening skills, communication, orientation and mobility, vocation/career options, and daily living skills. Students with low vision or who are legally blind may need help in using their residual vision more efficiently and in working with special aids and materials. Students who have visual handicaps combined with other types of disabilities have a greater need for an interdisciplinary approach and may require greater emphasis on self care and daily living skills.

✧ Resources ✧

American Foundation for the Blind. (1988). Directory of Services for Blind and Visually Impaired Persons in the United States. New York, NY: Author (23rd ed.).

Curran, E.P. (1988). *Just Enough to Know Better. (A Braille Primer).* National Braille Press: Boston, MA.

Dodson-Burk, B. & Hill, Everett W. (1989). *An Orientation and Mobility Primer for Families and Young Children.* New York, NY: American Foundation for the Blind.

Ferrell, K.A. (1985). *Reach Out and Teach: Materials for Parents of Visually Handicapped and Multihandicapped Young Children.* New York, NY: American Foundation for the Blind.

Hazekamp, J. & Huebner, K.M. (1989). *Program Planning and Evaluation for Blind and Visually Impaired Students: National Guidelines for Educational Excellence.* New York, NY: American Foundation for the Blind.

Huebner, K.M., to Swallow, R.M. (1987). *How to Thrive, Not Just Survive: A Guide to Developing Independent Life Skills for Blind and Visually Impaired Children and Youth.* New York, NY: American Foundation for the Blind.

Kastein, S., Spaulding, I. & Scharf, B. (1980). *Raising the Young Blind Child: A Guide for Parents and Educators.* New York, NY: Human Science Press.

Scott, E., Jan, J. & Freeman, R. (1985). *Can't Your Child See?* (2nd ed.) Austin, TX: PRO-ED.

◆ Organizations ◆

American Council of the Blind Parents
c/o American Council of the Blind
1010 Vermont Avenue, N.W., Suite 1100
Washington, D.C. 20005
(202) 467-5081; (1-800) 424-8666

American Foundation for the Blind
15 West 16th Street
New York, NY 10011
(212) 620-2000; (1-800) AFBLIND (Toll Free Hotline)

Blind Children's Center
4120 Marathon Street
P.O. Box 29159
Los Angeles, CA 90029-0159
(213) 664-2153; (1-800) 222-3566

Division for the Visually Handicapped
c/o Council for Exceptional Children
1920 Association Drive
Reston, VA 22091
(703) 620-3660

National Association for Parents of the Visually Impaired, Inc.
2180 Linway Drive
Beloit, WI 53511
(800) 562-6265

National Association for Visually Handicapped
22 West 21st Street
New York, NY 10010
(212) 889-3141

National Braille Association, Inc. (NBA)
1290 University Avenue
Rochester, NY 14607
(716) 473-0900

National Braille Press
88 St. Stephen Street
Boston, MA 02115
(617) 266-6160; (1-800) 548-7323

National Eye Institute
National Institutes of Health
U.S. Department of Health & Human Services
Building 31A, Room 32
Bethesda, MD 20892
(301) 496-5248

National Federation of the Blind, Parents Division
c/o National Federation of the Blind
1800 Johnson Street
Baltimore, MD 21230
(410) 659-9314

National Library Services for the Bind and Physically Handicapped
Library of Congress
1291 Taylor Street, N.W.
Washington, D.C. 20542
(202) 707-5100; (1-800) 424-8567

National Retinitis Pigmentosa Foundation
1401 Mt. Royal Avenue, Fourth Floor
Baltimore, MD 21217
(410) 225-9400; (410) 225-9409 (TDD)
(1-800) 683-5555 (Toll Free)

National Society to Prevent Blindness
500 E. Remington Road
Schaumburg, IL 60173
(708) 843-2020; (1-800) 221-3004 (Toll Free)

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Attention Deficit Disorder

by:
Mary Fowler

September, 1991

NICHCY
BRIEFING PAPER
National Information Center for Children
and Youth with Disabilities
P.O. Box 1492
Washington, D.C. 20013-1492

"Maybe you know my kid. He's the one who says the first thing that comes to mind. He's the youngster who can't remember a simple request. When he scrapes his knee, he screams so loud and long that the neighbors think I am beating him. He's the kid in school with ants in his pants who could do the work if he really tried. Or so his parents have been told over and over again."

Drawn from Mary Fowler's (1990) ***Maybe you know my kid: A parent's guide to identifying, understanding, and helping your child with ADHD.*** Used with permission.

Every year the National Information Center for Children and Youth with Disabilities (NICHCY) receives hundreds of requests for information about the education and special needs of children and youth with Attention Deficit Disorder (ADD) or Attention Deficit Hyperactivity Disorder (ADHD). Over the past three years, ADD and ADHD have become a subject of increased attention from parents, professionals, and policymakers across the country.

In response to the growing concern and interest in this disability, this ***NICHCY Briefing Paper*** was developed. It is designed to answer some of the most commonly asked questions regarding ADD and ADHD and to provide concerned individuals with other resources for information and support.

What is Attention Deficit Disorder?

Attention Deficit Disorder (ADD), also called Attention Deficit Hyperactivity Disorder (ADHD), is a developmental disability estimated to affect between 3-5% of all children (Barkley, 1990). The disorder is characterized by three predominant features: inattentiveness, impulsivity, and in many but not all cases, restlessness or hyperactivity. The disorder is most prevalent in children and is generally thought of as a childhood disorder. Recent studies, however, show that ADD can and does continue throughout the adult years. Current estimates suggest that approximately 50 to 65% of the children with ADD will have symptoms of the disorder as adolescents and adults (Barkley, 1990, p. 124).

What Causes ADD?

Scientists and medical experts do not know precisely what causes ADD. Scientific evidence suggests that the disorder is genetically transmitted in many cases, and is caused by a chemical imbalance or deficiency in certain neurotransmitters (chemicals that regulate the efficiency with which the brain controls behavior). Results from a landmark study conducted by Alan Zametkin, M.D., and his colleagues at the National Institute of Mental Health showed that the rate at which the brain uses glucose, its main energy source, is lower in subjects with ADD than in subjects without ADD (Zametkin et al., 1990). Even though the exact cause of ADD remains unknown, we do know that ADD is a neurologically-based medical problem and is not caused by poor parenting or diet.

What Are The Signs of ADD?

Inattention. A child with ADD is usually described as having a short attention span and as being distractible. The child will have difficulty concentrating (particularly on tasks that are routine or boring), listening, beginning or finishing tasks, and following directions (especially when three or more steps are given at one time). The child may appear to hear but not listen. Parents and teachers find that they often have to repeat directions and redirect the child to tasks such as getting ready for school, putting away toys or materials, completing worksheets, or finishing meals. Some children with ADD wander about, while others appear to daydream.

Attention is a skill that can be applied or directed in a variety of ways. The inattentiveness of a child with ADD, then, can take several forms. The child may have difficulty with selective attention (figuring out where his or her attention needs to be), focusing attention (the child knows where attention needs to be, but has difficulty zeroing in on the relevant task), sustaining attention (difficulty in maintaining attention through distractions), and/or dividing attention (difficulty doing two or more tasks at the same time). The child can have difficulty with one or all of these attention skills.

Impulsivity. A child with ADD often acts without thinking, and has great difficulty waiting for his or her turn. The child may rush through assignments, shift excessively from one task to another, or frequently call out or ask irrelevant questions in class. This child will often interrupt others and have outbursts of inappropriate responses such as silliness or anger. When this child gets a case of "the giggles" or flies into a temper tantrum, he or she has great difficulty regaining emotional control.

Impulsivity often leads the child into physical danger and disapproval. He or she may engage in what looks like risk-taking behavior, such as running across a street without looking, climbing on or jumping from roof tops or tall trees, shooting a rubber band at a classmate, and so on. This child is not really a risk-taker but, rather, a child who has great difficulty controlling impulse. Often, the child is surprised to discover that he or she has gotten into a dangerous situation and has no idea how the situation developed or why.

Hyperactivity (Poor Motor Control). Many (but not all) children with ADD are hyperactive. A hyperactive child is often described as "always on the go" or "motor driven." This child runs or climbs excessively, has difficulty sitting still, fidgets, and engages in physical activity not related to the task, such as frequent pencil sharpening, falling out of his or her chair, finger tapping, or fiddling with objects. The child may also make excessive vocalizations, noises, or talk in a loud voice. It is important to realize, however, that some children are more hyperactive than others, and that a hyperactive child may have periods of calm as well.

In contrast to children who have ADD with hyperactivity, some children with ADD are underactive and often called "lazy" or "spacey." Children with ADD– those with hyperactivity and those without– are often "accident prone."

Disorganization. Inattentiveness and impulsivity often cause the child with ADD to be very disorganized. This child frequently forgets needed materials or assignments, loses his or her place, and has difficulty following sequences, such as directions with three or more steps. When given multiple worksheets or directions, the child often does not know where to begin or overlooks part of the assignment.

Social Skill Deficits. The child with ADD is often described as immature, lacking in self-awareness and sensitivity, and demanding of attention. The child may frustrate easily and be inconsiderate, overly sensitive, or emotionally overreactive. He or she may have difficulty expressing feelings, accepting responsibility for behavior, or get into frequent fights or arguments. This child often reacts to a social situation without first determining what behavior is desirable; for example, he or she may interrupt a game in progress or crack a "joke" during a serious moment. Though this child has social problems, it is important to understand that the social skills deficits stem from the disorder. This child wants to be liked and accepted, but usually goes about it with an inappropriate style.

Don't All Children Show These Signs Occasionally?

From time to time all children will be inattentive, impulsive, and exhibit high energy levels. But, in the case of ADD, these behaviors are the rule, not the exception. This child is often described as experiencing difficulty "getting with the program" at home, in school, or with peers. Keep in mind, however, that the degree of difficulty varies with each child.

Many parents spend years wondering why their child is difficult to manage. They may blame themselves, thinking they are "bad" parents or feeling guilty and ashamed of the way they respond to the child. As the child grows older, the "out of step" behavior is often misunderstood as a deliberate choice to be noncompliant, and the child is blamed. When the child enters school and experiences difficulty in that environment, teachers with knowledge of this disability may recognize the behaviors as possible indicators of ADD. Teachers without knowledge of ADD may blame the child, the parents, or both.

How Do I Know For Sure If My Child Has ADD?

There is a big difference between suspecting your child has ADD and knowing for certain. Parents are cautioned against diagnosing this disorder by themselves. ADD is a disability that, without proper identification and treatment, can have serious and long-term complications.

Unfortunately, there is no simple test, such as a blood test or urinalysis, which will determine if a child has this disorder. Diagnosing ADD is complicated and much like putting together a puzzle. An accurate diagnosis requires an assessment conducted by a well-trained professional, usually a developmental pediatrician, child psychologist, child psychiatrist, or pediatric neurologist.

What Does an ADD Assessment Involve?

The evaluation for diagnosing ADD usually includes the following elements:

1. A thorough medical and family history
2. A physical examination
3. Interviews with the parents, child, and child's teacher
4. Behavior rating scales
5. Observation of the child
6. Psychological tests which measure I.Q. and social and emotional adjustment, as well as screen for learning disabilities.

Sophisticated medical tests such as EEGs (to measure the brain's electrical activity) or MRIs (an X-ray that gives a picture of the brain's anatomy) are *NOT* part of the routine assessment. Such tests are usually given only when the diagnostician suspects another problem, and those cases are rare. Positron emission tomography (PET Scan) has recently been used for research purposes but is not part of the diagnostic evaluation.

The professional evaluating your child will look at all the information collected and decide whether or not your child has ADD. This professional will base this decision in part upon whether your child exhibits at least eight of the behaviors (called criteria) listed in the American Psychiatric Association's (APA) *Diagnostic and Statistical Manual* (DSM). These criteria are presented in Table 1.

It is useful to know that in recent years the description of ADD in the DSM has been revised as a result of research and the opinions of experts in the field. While prior editions of the DSM referred to the disorder as "ADD with hyperactivity" and "ADD without hyperactivity," the latest edition (called the DSM-III-R) uses the acronym ADHD, which stands for Attention Deficit Hyperactivity Disorder. This change in terminology shows the predominance of hyperactivity as one characteristic of the disability. Yet, many children with attention deficit disorders are not hyperactive. The DSM-III-R acknowledges this fact by stating that "signs of impulsiveness and hyperactivity are not present in **Undifferentiated Attention-deficit Disorder**" (p. 52). Thus, while professionals may assess a child according to

Table 1
Diagnostic Criteria for ADHD,
as Listed in the DSM-III-R*

Note: A criterion is met only if the behavior occurs more frequently in a child being assessed than in most people of the same mental age.

A. At least eight of the following behaviors must be present, for at least six months:

- often fidgets with hands or feet, or squirms in seat (in adolescents, may be limited to subjective feelings of restlessness)
- has difficulty remaining seated when required to do so
- is easily distracted by extraneous stimuli
- has difficulty awaiting turn in games or group situations
- often blurts out answers to questions before they have been completed
- has difficulty following through on instructions from others (not due to oppositional behavior or failure to comprehend directions), e.g., fails to complete chores
- has difficulty sustaining attention in tasks or play activities
- often shifts from one uncompleted activity to another
- has difficulty playing quietly
- often talks excessively
- often interrupts or intrudes on others, e.g., butts into other children's games
- often does not seem to listen to what is being said to him or her
- often loses things necessary for tasks or activities at school or at home (e.g., toys, pencils, books, assignments)
- often engages in physically dangerous activities without considering possible consequences (not for the purpose of thrill-seeking), e.g., runs into street without looking

B. These behaviors begin before the age of seven.

* Drawn from the American Psychiatric Association's (1987), *Diagnostic and Statistical Manual of Mental Disorders* (3rd edition-revised), pp. 52-53.

the criteria listed in the DSM-III-R, they will take into consideration that hyperactive or impulsive behavior may not necessarily be present in all children with ADD.

In general, then, for a child to be diagnosed as having ADD, the behavioral signs listed in Table 1 must be evident in early childhood (prior to age seven), inappropriate for the child's age, and present for at least six months.

All children with ADD do not have the disorder to the same degree or intensity. ADD can be mild with the child exhibiting few symptoms in perhaps only the home or school environment. Other children may have moderate to severe degrees of ADD and experience difficulty in all areas of their lives.

How Do I Get My Child Evaluated For ADD?

If your child is an infant or toddler, and you suspect an attention or hyperactivity problem, you may want to investigate what early intervention services are available in your state through the Part H program of the Individuals with Disabilities Education Act (IDEA). You can find out about the availability of these services in your state by contacting the StateDepartment of Education, contacting your local education agency, asking your pediatrician, or contacting the nursery or child care department in your local hospital.

While your state may not specifically list ADD as a disability to be addressed through the Part H program, most states have a category such as "atypical children" or "other" under which an ADD assessment might be made.

Preschoolers (children aged 3-5) may be eligible for services under Part B of the Individuals with Disabilities Education Act. If your child is a preschooler, you may wish to contact the State Department of Education, local education agency, ask your pediatrician, or talk with local day care providers about how to access services under Part B in order to have your child assessed.

If your child is school-aged, and you suspect that ADD may be adversely affecting his or her educational performance, you can ask your local school district to conduct a evaluation. With the exception of the physical examination, the assessment can be conducted by the child study team, provided they have been trained in the assessment of Attention Deficit Disorder. If not, the district may need to utilize an outside professional consultant trained in the assessment of ADD. This person must know what to look for during child observation, be competent to conduct structured interviews with the parent, teacher, and child, be able to interpret the interview results, and know how to administer and interpret behavior rating scales.

Parents may also choose to have their child assessed privately. In selecting a professional to perform an assessment for ADD, parents should consider the clinician's training and experience with the disorder, and his or her availability to coordinate the various treatment approaches. Parents can consult their child's pediatrician, community mental health center, university mental health clinics, or hospital child evaluation units. Most ADD parent support groups have a list of clinicians trained to evaluate and treat children with ADD.

How is ADD Treated?

There is no cure or "quick fix" when treating ADD. Widely publicized "cures" such as special diets have, for the most part, proven ineffective.

Effective treatment of ADD generally requires these basic components: education about the disorder, training in the use of behavior management, medication when indicated, and an appropriate educational program.

(1) Education about the Disorder. Parents and teachers need to be aware of the symptoms of ADD and how those symptoms impact the child's ability to function at home, in school, and in social situations. Once the adults in the child's life understand that the child cannot help many of his or her problematic behaviors, they will be able to structure situations to enable the child to behave appropriately and achieve success. Remember, the child who has difficulty with attention, impulse control, and in regulating physical activity needs help and encouragement to overcome these problems.

(2) Behavior Management. Children with ADD respond well to rewards and structure. The child does best in an organized environment where rules and expectations are clear and consistent, and when consequences for meeting the demands of a given situation are set forth ahead of time and delivered immediately. Thus, the child's environment needs to be ordered and predictable. Frequent and consistent praise and rewards for appropriate behavior such as completing tasks on time or being polite and courteous encourage the child to repeat such desirable behavior.

The main principle behind all behavior management strategies is to increase the child's appropriate behavior and decrease inappropriate behavior through the use of consequences. The best way to influence any behavior is to pay attention to it. The best way to increase a desirable behavior is to reward it. Ignoring an undesirable behavior will decrease its frequency.

There are many books on behavior management written for the lay person. Below are some guidelines for behavior management.

Guideline 1, Behavior Modification Charts: Children with ADD usually require a formal program for managing their behavior. Most often, such a program centers around behavior modification charts. Parents, teachers, and other important adults in the child's life will need training in how to implement and use these charts effectively.

Charts are designed to provide the child with a clear picture of what behaviors are expected. The child then has the choice to meet those expectations. Parents or teachers provide feedback to the child about his or her choices by delivering consequences. Charts provide high motivation and enable the child to develop an internal sense of self-control — specifically, that he or she can behave appropriately.

There are two basic types of chart programs. (1) *Token Economy* - Here, the child earns tokens (chips, stickers, stars) for appropriate behavior. Tokens can be exchanged for various rewards. (2) *Response Cost* - In this chart program, the child is given tokens for free. Tokens are withdrawn for inappropriate behavior (e.g., out of seat, off-task, etc.).

The most effective programs use both types of chart systems and work on a give and take basis. In this combination system, the child is given a token for behaving appropriately and loses a token when misbehaving.

When creating and implementing a behavior modification chart, you may wish to follow these suggestions:

- ✓ Make a list of problematic behaviors or ones that need improving.
- ✓ Select the behaviors to be modified. The parents (or teachers), with input from the child, review the list of problematic behaviors and select three, four, or five to work on at a given time. The behaviors charted should be ones that occur daily, such as going to bed on time, doing homework, or getting ready for school on time.
- ✓ Design a reward system (Token Economy, Response Cost, or a combination). The parents (or teachers) need to pay attention to the child's behavior throughout the course of a day and provide frequent rewards when the child behaves appropriately. At the end of the day, tokens can be exchanged for rewards, such as extended bed time, playing a game with Mom or Dad, or a favorite snack. Remember, a reward is only effective when it has value to the child. Rewards might have to be changed frequently.

Guideline 2, Punishment: Children with ADD respond best to motivation and positive reinforcement. It is best to avoid punishment. When punishment is necessary, use it sparingly and with sensitivity. It is important for parents and teachers to respond to this child's inappropriate behavior without anger and in a matter-of-fact way. These children need to be taught to replace inappropriate behavior with appropriate behavior.

Guideline 3, Time-out: When the child is misbehaving or out of control, time-out is an effective way to manage the problem. Time-out means the child is sent to a predetermined location for a short period of time. A place out of the mainstream of activity is best; for example, one particular chair may be specified as the "time-out chair." The time-out location should not be a traumatic place, such as a closet or dark basement. The purpose of time-out is to provide the child with a cooling-off period wherein he or she can regain control.

An important aspect to time-out is that the child no longer has the privilege to choose where he or she would like to be and how time is spent. In general, the child stays in time-out and must be quiet for five minutes. Preschool-aged children are usually given two or three minutes in time-out. For toddlers, 30 seconds to a minute is appropriate.

(3) Medication. Medication has proven effective for many children with ADD. Most experts agree, however, that medication should never be the only treatment used. Stimulants are the medication most widely prescribed for ADD. These drugs (e.g. Ritalin, Dexedrine, Cylert) are believed to stimulate the action of the brain's neurotransmitters, which enables the brain to better regulate attention, impulse, and motor behavior. Ritalin is the most widely used stimulant medication. In most cases, Ritalin has few and mild side-effects. Anti-depressant medications are also used in children who cannot take stimulant drugs.

The parents' decision to place a child on medication is a personal one and should be made after a thorough evaluation of the child has taken place and after careful consideration by both the parents and the physician. The prescribing physician should explain the benefits and drawbacks of this form of treatment to the parents. Doses are generally administered gradually, so that the child receives the lowest dose needed to achieve the best therapeutic benefit. Parents should monitor closely how their child responds to the medication. Such monitoring generally includes feedback from the child's teacher(s). Parent should communicate with the physician as often as is necessary to determine whether medication has reached the proper level for the child, and to discuss any problems or questions.

(4) Appropriate Educational Program. Many children with ADD experience the greatest difficulty in school where demands for attention and impulse or motor control are virtual requirements for success. Though most children with ADD do not have a learning disability that interferes with the psychological process of learning, these children often are unable to perform to their level of ability in school. Their poor performance and academic failure usually result from uncompleted tasks, assignments completed but not handed in on time, disorganization, and not following directions. Behavioral difficulties such as hyperactivity, low frustration tolerance, and outbursts of temper also prevent many of these children from adapting to the classroom regimen. With help, these children can and do succeed in school. (Note: Some children with ADD, however, *do* have learning disabilities. Any evaluation should screen for the co-existence of learning disabilities or other disabilities and ADD.)

Children with ADD do best with a teacher who is knowledgeable about the disorder and willing to problem-solve to help the child overcome his or her difficulties. A classroom where activities are highly structured and where the teacher uses lots of motivation and hands-on instruction are similarly helpful to children with ADD. Teachers and parents need to communicate frequently.

There are numerous interventions which can be used effectively with the ADD child. Here are a few guidelines:

- ✓ The classroom environment needs to be structured and predictable, with rules, schedules, and assignments posted and clearly spelled out.
- ✓ It is best to seat the child close to the teacher, away from distractors.
- ✓ Directions should be clear, simple, and given a few at a time.
- ✓ The curriculum will need to be modified in accordance with the child's organizational skills and his or her ability to pay attention and concentrate. How tasks are approached may be modified in a number of ways. For example, tasks can be structured into easily completed parts; the length of assignments can also be shortened or the child can be given extra time to complete tasks. The child's progress during tasks can be monitored. Including organizational and study skills in the daily curriculum is another helpful modification, as is coordinating the amount of work between subject areas.
- ✓ Behavior management (e.g. positive reinforcement) is also necessary. Behavior charts, used in combination with other educational interventions, often produce positive results.

How Can I Help My Child Improve Self-Esteem?

Most undiagnosed and untreated children with ADD suffer from low self-esteem. Many will also show signs of being mildly depressed. These feelings stem from the child's sense of personal failure. For the child with ADD, the world is often an unkind place. Negative feedback in the form of punishment or blame tends to be a constant in this child's life. Early diagnosis and treatment help to stem the feelings of poor self-esteem.

To encourage a good sense of self, this child must be helped to recognize personal strengths and to develop them. Using many of the behavior management techniques described in this document will help. The child's self-esteem will improve when he or she feels competent. These are not children who can't, or won't. They can, and do. It's just that "can" and "do" come harder for them.

Does My Child Need Special Education?

Approximately one half of the children with ADD are able to learn satisfactorily and perform to their ability levels within a regular education classroom *when the disorder is recognized, understood, and when curriculum adjustments to the regular program of instruction are made.*

WAYS TO IMPROVE SELF-ESTEEM IN CHILDREN WHO HAVE ADD

Become Proactive. Knowledge is power. Gain enough knowledge about the disability so you understand why and how ADD affects the child at home, in school, in social situations, and the entire family system.

Change Your Belief System. Before the child can change his or her self-concept, the adults in the child's life have to change the way they view the child. Separate the child from the behavior, and then separate the child from the disability. These are not ADD children. They are children with ADD.

Act, Don't React. Emotional responses such as blame and anger will diminish when you stop, look, listen, and then respond. In other words, count to ten.

Nurture Yourself. Take time alone with your spouse, develop an interest or hobby, establish a regular exercise program – be good to yourself.

Catch The Child Being Good. Give your child lots of praise, encouragement, recognition, and positive attention. Reward the child for meeting expectations. Use punishment sparingly, and never ridicule the child.

Develop The Child's Sense of Competence and Responsibility.

- Identify the child's strengths and weaknesses.
- Develop realistic expectations of the child.
- Play to the child's strengths by building opportunities for success in the environment. Remember, you may have to structure situations carefully to make success achievable.
  - **Assign special jobs** (feeding the family pet, mowing the lawn, decorating the house for holidays).
  - **Cultivate the child's special interests** (help start a card or doll collection, take trips to museums).
  - **Enroll the child in extra-curricular activities** (sports, performing arts). Finding an activity best suited to your child may require trial and error. Encourage the child by attending practices and performances.
  - **Play with your child.** Let the child choose and direct the game or activity and, if not too obvious, let the child win.

"I think I can. I think I can," said the little red engine. And he could.

> *"I am one of the lucky mothers. I now understand why my son behaves the way he does. I know now that the disturbing behaviors which appeared at various stages of his development were neither of his own doing or my fault. If you are the parent of a child with ADD, I want you to know that children with ADD aren't really pain in the neck kids with lousy parents. Know when and where to go for help and support. Understand that they are the children who have ADD."*

Drawn from Mary Fowler's (1990) *Maybe you know my kid: A parent's guide to identifying, understanding, and helping your child with ADHD.* Used with permission.

The other half of the children with ADD will require special education services, most of which can be provided within the regular education classroom or the resource room. Such services might include teaching of organization techniques, behavior modification programs, daily or weekly report cards, training in self-monitoring, self-evaluation, and self-instruction methods, and the coordination of efforts among the different teachers working with the child.

Some children — approximately 15% — will need a more intensive program, particularly those children who have other disabilities in addition to ADD. A series of steps is typically necessary in order for a child to be placed into a special education program. First, the child is referred to the local school district's evaluation team. An evaluation is then made to determine what effect the child's disability is having on his or her ability to perform educationally. Once a child is determined to be eligible for special education and related services, the parents collaborate with the school in developing an individualized educational plan (IEP). The IEP is designed to address the child's specific problems and unique learning needs. Strategies to improve social and behavioral problems are also addressed in the IEP.

What Are My Child's Legal Rights For Special Education?

Numerous sources are available to provide information about your child's right to receive special education and related services. For an in-depth explanation of the laws governing the rights of children, contact the National Information Center for Children and Youth With Disabilities (NICHCY). Request a copy of ***NICHCY's NEWS DIGEST*** entitled *The Education of Children and Youth with Special Needs: What Do the Laws Say?* (Volume I, Number 1, 1991).

Where Can I Find a Parent Support Group?

There are numerous ADD parent support groups located throughout the country. For information about a group in your location, contact CH.A.D.D. (Children with Attention Deficit Disorders) at 499 NW 70th Avenue, Suite 308, Plantation, FL 33317. You can also call CH.A.D.D. at (305) 587-3700. If there is no parent support group in your area, the CH.A.D.D. staff can give you guidance in how to start a group in your area.

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U.S. Department of Education Issues ADD Policy Clarification...

A Policy Clarification Memorandum on Attention Deficit Disorder has been issued jointly by three offices within the Department of Education. It has been jointly signed by Robert R. Davila, Assistant Secretary for the Office of Special Education and Rehabilitative Services, Michael L. Williams, Assistant Secretary for the Office for Civil Rights, and John T. MacDonald, Assistant Secretary for the Office of Elementary and Secondary Education.

The Memorandum does three things. It clarifies the circumstances under which children with ADD are eligible for special education services under Part B of the Individuals with Disabilities Education Act (IDEA), as well as the Part B requirements for evaluation of such children's unique educational needs. It also clarifies the responsibility of State and local educational agencies to provide special education and related services to eligible children with ADD under Part B. Finally, this policy clarifies the responsibility of Local Education Agencies (LEAs) to provide regular or special education and related aids and services to those children with ADD who are not eligible under Part B, but who fall within the definition of "handicapped persons" under Section 504 of the Rehabilitation Act of 1973.

A copy of this Policy Memorandum is available by writing or calling NICHCY.

FYI: Information Resources from NICHCY's Database

Bibliographic Note:

The following information was selected from numerous resources abstracted in *NICHCY*'s database. If you know of a group which provides information about ADD or ADHD to families, professionals, or the general public, or develops materials in this area, please send this information to *NICHCY* for our resource collection and database. We will appreciate this information and will share it with others who request it.

You can obtain many of the documents listed below through your local library. Whenever possible, we have included the publisher's address or some other source in case the publication is not available in your area. The organizations listed provide various services and information about ADD and ADHD.

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Organizations

Attention Deficit Disorder Association (ADDA) - 80913 Ireland Way, Aurora, CO 80016. Telephone: (313) 690-7548.

Attention Deficit Information Network (AD-IN) - P.O. Box 790, Plymouth, MA 02360. Telephone: (508) 747-5180.

A.D.D. Warehouse - 300 NW 70th Ave., Plantation, FL 33317, Telephone: (800) 233-9273.

Center for Hyperactive Children Information, Inc. (CHCI) - P.O. Box 66272, Washington, DC 20035. Telephone: (703) 415-1090.

Children with Attention Deficit Disorders (CH.A.D.D.) - 499 NW 70th Avenue, Suite 308, Plantation, FL 33317. Telephone: (305) 587-3700.

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PROJECT STAFF

Project Director....Carol H. Valdivieso, Ph.D.
Deputy Director....Suzanne Ripley
Information Resources Manager....Richard L. Horne
Editor....Lisa Küpper
Graphic Design/Layout....Michael W. Blouin

Mary Fowler, a former teacher and founder of an ADHD parent support group in New Jersey, is on the National Board of Directors of Children with Attention Deficit Disorders, CH.A.D.D. She currently serves as CH.A.D.D.'s Director of Government Affairs and is one of the country's leading education advocates for children with Attention Deficit/Hyperactivity Disorders. Ms. Fowler conducts many workshops and lectures for teachers and parents on the subject. She lives in Fair Haven, New Jersey.

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National Information NICD Center on Deafness

DEAFNESS: A FACT SHEET

This fact sheet was written cooperatively by the National Information Center on Deafness and the National Association of the Deaf.

Introduction

An estimated 21 million Americans have some degree of hearing impairment. Hearing impairments affect individuals of all ages, and may occur at any time from infancy through old age. The degree of loss may range from mild to severe. This variability in age at onset and degree of loss plus the fact that each individual adjusts differently to a loss of hearing makes it impossible to define uniformly the consequences of a loss.

Although the National Center for Health Statistics through its Health Interview Survey has been able to estimate the number of people with hearing impairments, there have been no recent national surveys which can be used to estimate the number of people who are deaf. As a result, estimates for the number of deaf people range anywhere from 350,000 to two million.

Audiological/Medical Information

There are four types of hearing loss, each of which can result in different problems and different possibilities for medical and nonmedical remediation.

Conductive hearing losses are caused by diseases or obstructions in the outer or middle ear (the conduction pathways for sound to reach the inner ear). Conductive hearing losses usually affect evenly all frequencies of hearing and do not result in severe losses. A person with a conductive hearing loss usually is able to use a hearing aid well, or can be helped medically or surgically.

Sensorineural hearing losses result from damage to the delicate sensory hair cells of the inner ear or the nerves which supply it. These hearing losses can range from mild to profound. They often affect certain frequencies more than others. Thus, even with amplification to increase the sound level, the hearing impaired person perceives distorted sounds. This distortion accompanying some forms of sensorineural hearing loss is so severe that successful use of a hearing aid is impossible.

Mixed hearing losses are those in which the problem occurs both in the outer or middle and the inner ear.

A **central** hearing loss results from damage or impairment to the nerves or nuclei of the central nervous system, either in the pathways to the brain or in the brain itself.

Among the causes of deafness are heredity, accident, and illness. An unborn child can inherit hearing loss from its parents. In about 50 percent of all cases of deafness, genetic factors are a probable cause of deafness. Environmental factors (accident, illness, ototoxic drugs, etc.) are responsible for deafness in the remaining cases. Rubella or other viral infections contracted by the pregnant mother may deafen an unborn child. Hazards associated with the birth process (for example, a cut-off in the oxygen supply), may affect hearing. Illness or infection may cause deafness in young children. Constant high noise levels can cause progressive and eventually severe sensorineural hearing loss, as can tumors, exposure to explosive sounds, heavy medication, injury to the skull or ear, or a combination of these factors.

Central hearing loss may result from congenital brain abnormalities, tumors or lesions of the central nervous system, strokes, or some medications that specifically harm the ear.

The detection and diagnosis of hearing impairment have come a long way in the last few years. It is now possible to detect the presence of hearing loss and evaluate its severity in a newborn child. While medical and surgical techniques of correcting conductive hearing losses have also improved, medical correction for sensorineural hearing loss has been more elusive. Current research on a cochlear implant which provides electrical stimulation to the inner ear may lead to important improvements in the ability to medically correct profound sensorineural hearing loss.

Educational Implications

Deafness itself does not affect a person's intellectual capacity or ability to learn. Yet, deaf children generally require some form of special schooling in order to gain an adequate education.

Deaf children have unique communication needs. Unable to hear the continuous, repeated flow of language interchange around them, deaf children are not automatically exposed to the enormous amounts of language stimulation experienced by hearing children during their early years. For deaf children, early, consistent, and conscious use of visible communication modes (such as sign language, fingerspelling, and Cued Speech) and/or amplification and aural/oral training can help reduce this language delay. Without such assistance from infancy, problems in the use of English typically persist throughout the deaf child's school years. With such assistance, the language learning task is easier but by no means easy.

This problem of English language acquisition affects content areas as well. While the academic lag may be small during the primary grades, it tends to be cumulative. A deaf adolescent may be a number of grade levels behind hearing peers. However, the extent to which hearing impairment affects school achievement depends on many factors—the degree and type of hearing loss, the age at which it occurred, the presence of additional handicaps, the quality of the child's schooling, and the support available both at home and at school.

Many deaf children now begin their education between ages one to three years in a clinical program with heavy parental involvement. Since the great majority of deaf children—over 90 percent—are born to hearing parents, these programs provide instruction for parents on implications of deafness within the family. By age four or five, most deaf children are enrolled in school on a full-day basis. Approximately one-third of school-age deaf children attend private or public residential schools. Some attend as day students and the rest usually travel home on weekends. Two-thirds attend day programs in schools for the deaf or special day classes located in regular schools, or are mainstreamed into regular school programs. Some mainstreamed deaf children do most or all of their schoolwork in regular classes, occasionally with the help of an interpreter, while others are mainstreamed only for special activities or for one or two classes.

In addition to regular school subjects, most programs do special work on communication and language development. Class size is often limited to approximately eight children to give more attention to the children's language and communication needs.

At the secondary school level, students may work toward a vocational objective or follow a more academic course of study aimed at postsecondary education at a regular college, a special college program for deaf students (such as Gallaudet University or the National Technical Institute for the Deaf) or one of the 100 or more community colleges and technical schools that have special provisions for deaf students.

Communication: Some Choices

Communication is an important component of everyone's life. The possible choices for communication involve a variety of symbol systems. For example, you may communicate in English through speaking and writing. Despite your skills, you probably cannot communicate with someone whose only language is Chinese, even though that person also speaks, reads, and writes quite fluently.

In the United States, deaf people also use a variety of communication systems. They may choose among speaking, speechreading, writing, and manual communication. Manual communication is a generic term referring to the use of manual signs and fingerspelling.

American Sign Language

American Sign Language (ASL) is a language whose medium is visible rather than aural. Like any other language, ASL has its own vocabulary, idioms, grammar, and syntax—*different from English*. The elements of this language (the individual signs) consist of the handshape, position, movement, and orientation of the hands to the body and each other. ASL also uses space, direction and speed of movements, and facial expression to help convey meaning.

Fingerspelling

When you spell with your fingers, you are in effect "writing in the air." Instead of using an alphabet written on paper, you are using a manual alphabet, that is, one with handshapes and positions corresponding to each of the letters of the written alphabet.

Conversations can be entirely fingerspelled. Among deaf people, however, fingerspelling is more typically used to augment American Sign Language. Proper names and terms for which there are no signs are usually fingerspelled. In the educational setting, the use of fingerspelling as the primary mode of communication in combination with spoken English is known as the Rochester method.

Manual English

When the vocabulary of the American Sign Language and fingerspelled words are presented in English word order, a 'pidgin' results. Pidgin Sign English (PSE) is neither strictly English nor ASL, but combines elements of both.

A number of systems have recently been devised to assist deaf children in learning English. These systems supplement some ASL signs with invented signs that correspond to elements of English words (plurals, prefixes and suffixes, for example). There is usually a set of rules for word (sign) formation within the particular system. These systems are generically known as manually coded English or manual English systems. The two most commonly used today are Signing Exact English and Signed English. While each of these systems was devised primarily for use by parents and teachers in the educational setting, many of the invented and initialized signs from their lexicons are filtering into the vocabulary of the general deaf community.

Oral Communication

This term denotes the use of speech, residual hearing, and speechreading as the primary means of communication for deaf people.

The application of research findings and technological advances through the years has led to refinements in the rationale for and approach to teaching speech to deaf children. Several findings are pertinent here. Deaf children may actually have functional residual hearing. The speech signal is redundant. Since it carries excess information, it is not necessary to hear every sound to understand a message. For language learning to be successful with deaf children (no matter what the educational approach), programs of early intervention must take place during the critical language-learning years of birth through 6. Hearing screening procedures that accurately detect hearing impairments in very young children make it possible to fit hearing aids and other amplification devices and to introduce auditory and language training programs as soon as the problem is detected.

Almost all auditory approaches today rely heavily on the training of residual hearing. The traditional auditory/oral approach trains the hearing impaired child to acquire language through speechreading (lipreading), augmented by the use of residual hearing, and sometimes vibro-tactile cues. The auditory/verbal approach (also called unisensory or acoupedic method) teaches children to process language through amplified residual hearing, so that language is learned through auditory channels.

Speechreading

Recognizing spoken words by watching the speaker's lips, face, and gestures is a daily challenge for all deaf people. Speechreading is the least consistently visible of the communication choices available to deaf people; only about 30 percent of English sounds are visible on the lips, and 50 percent are homophonous, that is, they look like something else. Try it for yourself. Look in a mirror and 'say' without voice the words 'kite,' 'height,' 'night.' You'll see almost no changes on your lips to distinguish among those three words. Then say the following three words—'maybe,' 'baby,' 'pay me.' They look exactly alike on the lips.

Some deaf people become skilled speechreaders, especially if they can supplement what they see with some hearing. Many do not develop great skill at speechreading, but most deaf people do speechread to some extent. Because speechreading requires guesswork, very few deaf people rely on speechreading alone for exchanges of important information.

Cued Speech

Cued Speech is a system of communication in which eight hand shapes in four possible positions supplement the information visible on the lips. The hand "cue" signals a visual difference between sounds that look alike on the lips—such as /p/, /b/, /m/. These cues enable the hearing impaired person to see the phonetic equivalent of what others hear. It is a speech-based method of communication aimed at taking the guesswork out of speechreading.

Simultaneous Communication

This term denotes the combined use of speech, signs, and fingerspelling. Simultaneous communication offers the benefit of seeing two forms of a message at the same time. The deaf individual speechreads what is being spoken and simultaneously reads the signs and fingerspelling of the speaker.

Total Communication

Total Communication is a philosophy which implies acceptance and use of all possible methods of communication to assist the deaf child in acquiring language and the deaf person in understanding.

Historically, proponents of particular systems have often been at odds with proponents of other systems or modes. There is increasing consensus that whatever system or systems work best for the individual should be used to allow the hearing impaired person access to clear and understandable communication.

Deaf Adults in Today's Society

The deaf adult population in the United States is composed both of individuals deaf since early childhood and individuals who lost their hearing later in life. People who were deafened as adults, or after the age of 18, are sometimes called post-vocationally deaf. Having already embarked on their careers, these people may have serious problems both personally and professionally adjusting to their hearing loss. People who were deafened prior to age 18 may have problems not only with English language skills, but also, because of fewer opportunities for interaction with hearing people in pre-work settings, they may be less well prepared for interpersonal relationships they encounter in the job market.

Discrimination is a common problem for minority groups. Deaf people as members of a minority group, experience their share of discrimination. Deaf people as a group are underemployed. Together with members of other minority and disabled groups, deaf people are working to change attitudes which have given them jobs but inadequate advancement opportunities.

In the United States, deaf people work in almost every occupational field. Some have become doctors, dentists, lawyers, and members of the clergy. A number of deaf people enter careers within the field of deafness. Thirteen hundred teachers of deaf students in the United States are themselves hearing impaired individuals. In addition, there are deaf administrators, psychologists, social workers, counselors, and vocational rehabilitation specialists. Deaf people drive cars and hold noncommercial pilot's licenses and pursue the same leisure time interests as everyone else.

Many deaf young people have attended school with deaf classmates. This educational pattern, coupled with ease of communication and compatibility encouraged by shared experiences as deaf individuals, leads to socializing with other deaf individuals in maturity. Many deaf people (80 percent) tend to marry other deaf people; most of their children (approximately 90 percent) are hearing.

The Deaf Community

Because the problem in dealing with the hearing world is one of communication, deaf people tend to socialize together more than do people with other disabilities. However, members of the deaf community have contacts with other people, too. Some are active members of organizations of hearing people. Some deaf people move freely between hearing and deaf groups, while other deaf people may have almost no social contact with hearing people. A few deaf people may choose to socialize only with hearing people.

While it is possible to find deaf individuals in every section of the United States, there are major concentrations of deaf people in the larger metropolitan areas of the East and West coasts.

Organizations of and for Deaf People

Clubs and organizations of deaf people range in purpose from those with social motives (watching captioned films, for example) to those with charitable aims. Organizations offer deaf people the opportunity to pursue a hobby (athletics, drama) or civic commitment (political action) on the local, regional or national level. Local or state associations of deaf people may be affiliated with the National Association of the Deaf. The Oral Deaf Adults Section of the Alexander Graham Bell Association for the Deaf has local chapters that provide social opportunities for deaf people who favor oral communication. The National Fraternal Society of the Deaf provides insurance and supports social and charitable functions. It has 120 divisions throughout the United States and Canada.

A few of the more than 20 national organizations of and for deaf people in the United States are briefly described in the following list. Many of these organizations publish newsletters, magazines, or journals. Add to these the publications developed by clubs and schools for the deaf (for students and alumni) and it is possible to identify 400 publications aimed at a readership within the deaf community.

Alexander Graham Bell Association for the Deaf
3417 Volta Place, NW
Washington, DC 20007
(202) 227-5220 (V/TDD)

A private, nonprofit organization serving as an information resource, advocate, publisher, and conference organizer, the Alexander Graham Bell Association is committed to finding more effective ways of teaching deaf and hard of hearing people to communicate orally. Sections within the organization focus on the needs of deaf adults (Oral Deaf Adults Section) and parents (International Parent Organization).

American Deafness and Rehabilitation Association
P.O. Box 55369
Little Rock, AR 77225
(501) 663-4617 (V/TDD)

An interdisciplinary organization for professional and lay persons concerned with services to adult deaf people, ADARA sponsors workshops for state rehabilitation coordinators.

American Society for Deaf Children
814 Thayer Avenue
Silver Spring, MD 20910
(301) 585-5400 (V/TDD)

Composed of parents and concerned professionals, ASDC provides information, organizes conventions, and offers training to parents and families with children who are hearing impaired.

National Association of the Deaf
814 Thayer Avenue
Silver Spring, MD 20910
(301) 587-1788 (V/TDD)

With 50 state association affiliates and an aggregate membership exceeding 20,000, the NAD is a consumer advocate organization concerned about and involved with every area of interest affecting life opportunities for deaf people. It serves as a clearinghouse of information on deafness, offers for sale over 200 books on various aspects of deafness, and works cooperatively with other organizations representing both deafness and other disabilities on matters of common concern.

Educational Institutions

Schools for deaf students have traditionally played an important role in advancing the welfare of deaf people through education of deaf students and public information efforts about the capabilities and accomplishments of deaf people. Two national institutions each have enrollments of over 1,000 deaf students.

Gallaudet University
800 Florida Ave. NE
Washington, DC 20002-3625

National Technical Institute for the Deaf
Rochester Institute of Technology
1 Lomb Memorial Drive
Rochester, NY 14623

For descriptions of the more than 100 postsecondary programs for deaf students at community colleges and technical schools around the country, order a copy of **College and Career Programs for Deaf Students** for $12.95 from:

College and Career Programs
Center for Assessment and Demographic Studies
800 Florida Ave. NE
Washington, DC 20002-3625

Special Devices for Deaf People

Technology and inventiveness have lead to a number of devices which aid deaf people and increase convenience in their daily lives. Many of these devices are commercially available under different trade names.

Telecommunications Devices for Deaf People (TDDs) are mechanical/electronic devices which enable people to type phone messages over the telephone network. The term TDD is generic and replaces the earlier term TTY which refers specifically to teletypewriter machines. Telecaption adapters, sometimes called decoders, are devices which are either added to existing television sets or built into certain new sets to enable viewers to read dialogue and narrative as captions (subtitles) on the TV screen. These captions are not visible without such adapters.

Signalling Devices which add a flashing and/or vibrating signal to the existing auditory signal are popular with hearing impaired users. Among devices using flashing light signals are door "bells," telephone ring signallers, baby-cry signals (which alert the parent that the baby is crying), and smoke alarm systems. Alarm clocks may feature either the flashing light or vibrating signal.

Some Special Services

Numerous social service agencies extend their program services to deaf clients. In addition, various agencies and organizations—either related to deafness or to disability in general—provide specific services to deaf people. Among these special services are the following:

Captioned Films for the Deaf
A loan service of theatrical and educational films captioned for deaf viewers. Captioned Films for the Deaf is one of the projects funded by the Captioning and Adaptations Branch of the U.S. Department of Education to promote the education and welfare of deaf people through the use of media. This branch also provides funds for closed-captioned television programs, including the live-captioned ABC-TV news.

Registry of Interpreters for the Deaf, Inc.
A professional organization, RID maintains a national listing of individuals skilled in the use of American Sign Language and other sign systems and provides information on interpreting and evaluation and certification of interpreters for deaf people.

State Departments of Vocational Rehabilitation
Each state has specific provisions for the type and extent of vocational rehabilitation service, but all provide vocational evaluation, financial assistance for education and training, and job placement help.

Telecommunications for the Deaf, Inc.
TDI publishes an international telephone directory of individuals and organizations who own and maintain TDDs (telecommunications devices for deaf people) for personal or business use.

Contributors to the original fact sheet:

Roger Beach, Ph.D., Asst. Professor, Department of Counseling, Gallaudet University.

Bernadette Kappen, Ph.D., Asst. Principal, Overbrook School for the Blind, Philadelphia, PA.

William McFarland, Ph.D., Director of Audiology, Otologic Medical Group, Los Angeles, CA.

Philip Schmitt, Ph.D., Professor, Department of Education, Gallaudet University.

Ben M. Schowe, Jr., Ph.D., Learning Resources Center, MSSD, Gallaudet University.

Leticia Taubena-Bogatz, M.A., Teacher, KDES, Gallaudet University.

Revised by Loraine DiPietro, Director, National Information Center on Deafness, Gallaudet University.

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Schlesinger, H.; and Meadow, K. (1974). ***Sound and Sign: Childhood Deafness and Mental Health.*** Berkeley: University of California.

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Directory of Services

The April issue of the ***American Annals of the Deaf*** is a directory of the various programs and services for deaf persons in the United States. Copies of this reference may be purchased from:

American Annals of the Deaf
Gallaudet University
KDES, PAS 6
800 Florida Ave. NE
Washington, DC 20002-3625

Additional Information

If you have specific questions that were not answered by this fact sheet, please contact either the National Information Center on Deafness, Gallaudet University, Washington, DC 20002, or the National Association of the Deaf, 814 Thayer Avenue, Silver Spring, MD 20910.

The National Information Center on Deafness (NICD) is a centralized source of information on all aspects of deafness and hearing loss, including education of deaf children, hearing loss and aging, careers in the field of deafness, assistive devices and communication with hearing impaired people.

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Reading and Learning Disabilities: A Resource Guide

April, 1992

NICHCY

BRIEFING PAPER

National Information Center for Children
and Youth with Disabilities
P.O. Box 1492
Washington, D.C. 20013-1492

The National Information Center for Children and Youth with Disabilities (*NICHCY*) is pleased to respond to your request for information about the problems many children, youth, and adults experience with learning — in particular, with learning to read.

Having difficulty with reading is by no means unusual. Millions of people in the United States have trouble reading. Some may not be able to read at all, while others have basic reading skills but might be considered "slow readers." It is useful to know that problems with reading are often accompanied by problems with writing, listening, or speaking. Each person having trouble in any or all of these areas should know that *help is available.*

There are many reasons why a person might have difficulty in developing reading skills. One of the most common reasons is that the person has what is known as a *learning disability.* Dyslexia is one such learning disability. There are also many other types of learning disabilities that can cause problems with learning to read or learning in general. These are described later in this guide.

Not all troubles with reading are caused by learning disabilities. It is important to determine what is causing the problem. Some causes other than learning disabilities are poor vision or hearing, emotional disturbance, or mental retardation. A person having trouble with reading should talk with specialists in the reading field and receive a thorough assessment. Through assessment, the nature of the reading problem can be determined. Then action can be taken to help the person overcome his or her specific problem.

This information brief has been developed with two major purposes in mind. These are:

- to describe some of the most common learning disabilities that can cause reading problems; and
- to put you in touch with organizations that can provide you with help to fit your needs.

This document has four sections:

(1) a look at learning disabilities in children and youth;
(2) suggestions for parents in how to help their school-age children learn;
(3) considerations for adults with reading and learning problems, including a description of the diagnostic process for adults; and
(4) book and organizational resources for: parents of school-age children with learning disabilities; adults with learning disabilities; and educators or other service providers who work with individuals with reading problems and/or learning disabilities.

We hope that you will take advantage of the expertise and assistance offered by the many excellent organizations we have listed throughout this document. They can help you to work with and overcome your reading problems. If you find you have need of additional information or assistance, please feel free to contact *NICHCY* again.

Table of Contents

A Look at Learning Disabilities in Children and Youth 2
Helping Your Child Learn: Some Suggestions for Parents 4
Adults with Reading or Learning Problems 6
FYI: Information Resources from NICHCY's Database
  Readings for Parents 7
  Readings for Adults 7
  Readings for Educators and Other Service Providers 8
  Organizational Resources 9

A Look at Learning Disabilities in Children and Youth

by Larry B. Silver, M.D.

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Children and adolescents perform poorly in school for various reasons. Some have emotional or family problems; for others, the source of trouble is the community, the school, or peers; and some are simply below average intellectually. But 10 to 20 percent have a neurologically-based disorder of the type called a *learning disability*. According to the definition used by the federal government, these children are of at least average intelligence (many are far above average), and their academic problems are not caused by an emotional disturbance, by social or cultural conditions, or by a primary visual, hearing, or motor disability. Instead, the reason for their learning problems seems to be that their brains are "wired" in a way slightly different from the average person's. About 20 percent of children with learning disabilities also have a related problem, attention deficit disorder (ADD) or attention deficit hyperactivity disorder (ADHD). Its symptoms include hyperactivity, distractibility, and impulsiveness. ADD or ADHD must be evaluated and treated separately from the learning disability.

Learning disabilities are lifelong conditions that may require special understanding and help throughout grade school, high school, and beyond. They are also life disabilities that have important effects outside of the classroom, interfering not only with academic work but also with children's games, daily activities, and even friendships. Therefore, help for these children means more than classroom special education.

Types of Learning Disabilities

By the late 1960s, the present model of learning disabilities was established. This model distinguishes four stages of information processing used in learning: input, integration, memory, and output. *Input* is the process of recording in the brain information that comes from the senses. *Integration* is the process of interpreting this information. *Memory* is its storage for later retrieval. *Output* of information is achieved through language or motor (muscular) activity. Learning disabilities can be classified by their effects at one or more of these stages. Each child has individual strengths and weaknesses at each stage.

Input. The first major type of problem at the input stage is a visual perception disability. Some students have difficulty in recognizing the position and shape of what they see. Letters may be reversed or rotated; for example, the letters d, b, p, q, and g might be confused. The child might also have difficulty distinguishing a significant form from its background. People with this disability often have reading problems. They may jump over words, read the same line twice, or skip lines. Other students have poor depth perception or poor distance judgement. They might bump into things, fall over chairs, or knock over drinks.

The other major input disability is in auditory perception. Students may have difficulty understanding because they do not distinguish subtle differences in sounds. They confuse words and phrases that sound alike — for example, "blue" with "blow" or "ball" with "bell." Some children find it hard to pick out an auditory figure from its background; they may not respond to the sound of a parent's or teacher's voice, and it may seem that they are not listening or paying attention. Others process sound slowly and therefore cannot keep up with the flow of conversation, inside or outside the classroom. Suppose a parent says, "It's getting late. Go upstairs, wash your face, and get into your pajamas. Then come back down for a snack." A child with this disability might hear only the first part and stay upstairs.

Integration. Integration disabilities take several forms, corresponding to the three stages of sequencing, abstraction, and organization.

A student with a sequencing disability might recount a story by starting in the middle, going to the beginning, and then proceeding to the end. The child might also reverse the order of letters in words, seeing "dog" and reading "god." Such children are often unable to use single units of a memorized sequence correctly. If asked what comes after Wednesday, they have to start counting from Sunday to get the answer. In using a dictionary, they must start with "A" each time.

The second type of integration disability involves abstraction. Students with this problem have difficulty in inferring meaning. They may read a story but not be able to generalize from it. They may confuse different meanings of the same word used in different ways. They find it difficult to understand jokes, puns, or idioms.

Once recorded, sequenced, and understood, information must be organized — integrated into a constant flow and related to what has previously been learned. Students with an organization disability find it difficult to make bits of information cohere into concepts. They may learn a series of facts without being able to answer general questions that require the use of these facts. Their lives in and outside of the classroom reflect this disorganization.

Memory. Disabilities also develop at the third stage of information processing, memory. Short-term memory retains information briefly while we attend to it or concentrate upon it. For example, most of us can retain the 10 digits of a long distance telephone number long enough to dial, but we forget it if we are interrupted. When information is repeated often enough, it enters long-term memory, where it is stored and can be retrieved later. Most memory disabilities affect short-term memory only; students with these disabilities need many more repetitions than usual to retain information.

Output. At the fourth stage, output, there are both language and motor disabilities. Language disabilities almost always involve what is called "demand language" rather than spontaneous language. Spontaneous language occurs when we initiate speaking — select the subject, organize our thoughts, and fin the correct words before opening our mouths. Demand language occurs when someone else creates the circumstances in which communication is required. A question is asked, and we must simultaneously organize our thoughts, find the right words, and answer. A child with a language disability may speak normally when initiating conversation but respond hesitantly in demand situations — pause, ask for the question to be repeated, give a confused answer, or fail to find the right words.

Motor disabilities are of two types: poor coordination of large muscle groups, which is called gross motor disability; and poor coordination of small muscle groups, which is called fine motor disability. Gross motor disabilities make children clumsy. They stumble, fall, and bump into things; they may have difficulty in running, climbing, riding a bicycle, buttoning shirts, or tying shoelaces. The most common type of fine motor disability is difficulty in coordinating the muscles needed for writing. Children with this problem write slowly, and their handwriting is often unreadable. They may also make spelling, grammar, and punctuation errors.

Detecting a Learning Disability in Children

There are several early clues to the presence of a learning disability. In preschool children we look for failure to use language in communication by age three, or inadequate motor skills (buttoning, tying, climbing) by age five. In school-age children, we observe whether they are learning the skills appropriate to their grade. Schools and families should always consider the possibility of a learning disability before assuming that a child who has been doing poorly in school is lazy or emotionally disturbed. The Individuals with Disabilities Education Act (IDEA), Public Law (P.L.) 102-119 — formerly known as the Education for All Handicapped Children Act (EHA), P.L. 94-142 — requires public school systems to evaluate children who are at risk for a learning disability. Evaluations can also be performed by professionals in private practice, beginning with family doctors. Attention deficit disorder (ADD), attention deficit hyperactivity disorder (ADHD), and other problems should always be considered as well and evaluated by qualified professionals with expertise with these conditions. It is important to distinguish between emotional, social, and family problems that are causes and those that are consequences of academic difficulties, because they require different treatments.

The psychological assessment may include a neuropsychological or a clinical psychological evaluation. The intelligence of the child should be determined to learn whether the child is performing below potential. Discrepancies in performance between different sections of the IQ (intelligence quotient) test will help to clarify learning strengths and weaknesses. Other tests may be used to assess perception, cognition, memory, and language abilities. Current academic skills are judged by achievement tests. Both IQ and achievement tests help to clarify discrepancies between potential and actual ability. There are also specific tests that help to uncover learning disabilities. A speech pathologist, occupational therapist, or other professional may contribute further information, as can parents.

Treatment of Learning Disabilities in Children

Special education is the treatment of choice for learning disabilities in school. The Individuals with Disabilities Education Act requires that the school, in conjunction with the parents and relevant professionals, develop an individualized education plan (IEP) for each student with learning disabilities. This plan is revised every year to take into account each eligible student's present skills and learning disabilities and abilities. The specific instruction students receive will vary depending upon their needs and capabilities. Some students attend special education classes full time. Others spend most of their time in a regular class and go to a resource room for part of each day, or spend most of the day in special education and the rest in a regular class. The regular classroom teacher must build on the child's strengths while helping to compensate for weaknesses. The special education teacher consults with the classroom teacher and provides specific interventions, called academic therapy, to overcome or compensate for learning disabilities. Some children need remedial work to learn basic skills such as reading, writing, and arithmetic. Others also need special intervention to fill gaps; for example, students might have difficulty writing a composition in high school because they did not learn punctuation in an earlier grade. Strategies for learning appropriate to a given student's strengths and weaknesses can be taught. Some children need specific related services: a notetaker (for a student with a fine motor disability), word processors, laptop computers, books on tape, or extra time for tests. The IDEA requires schools to provide these special education and related services at no cost to families.

Parents must also try to understand the nature of their children's problems. Like classroom teachers, they must build on the child's strengths while compensating for or adjusting to the weaknesses without exposing them unnecessarily. A child with a visual motor disability, for example, might find it hard to load a dishwasher but could carry out the trash. The same child might have difficulty catching or throwing a ball, but no trouble swimming. Parents must think ahead about these matters to minimize their child's stress and to maximize his or her chance to experience success, make friends, and develop self-esteem. Treatment that affects only school work will not succeed, because learning disabilities are life disabilities.

It is essential to recognize learning disabilities and related problems as early as possible. Without recognition and help, children may become increasingly frustrated and distressed as they persistently fail. By the time they reach high school, they may give up. On the other hand, children whose problems are recognized early and treated appropriately can overcome or learn to compensate for their disabilities.

NICHCY thanks Dr. Larry Silver and the Learning Disability Association of Montgomery County, Inc., for permission to reprint Dr. Silver's article, which appeared in their November 1991 newsletter. The Learning Disability Association of Montgomery County, Inc., is a local chapter of the Learning Disabilities Association of America. You can contact LDAMC, Inc. by writing P.O. Box 623, Rockville, MD 20848-0623.

Helping Your Child Learn: Some Suggestions for Parents

If you suspect that your child is having trouble learning to read, or trouble with learning in general, there is help available. *For parents of school-age children, the first source of help should be the public school serving your area.* Contact your child's school principal, express your concerns, and ask to have your child evaluated. The school system is required by federal and state law to evaluate your child at no cost to you or your family.

The results of the evaluation will show whether or not your child has a problem with reading or learning and, if so, the nature of the problem. You may be told that your child has dyslexia or another type of learning disability. If the evaluation shows that your child *does* have a learning disability, the school is required by federal and state law to provide special education for your child — also at no cost to you or your family.

Suppose, however, that the results of the evaluation show that your child does *not* have a disability. In this case, there are a number of actions you can take. If you think that the school's evaluation of your child was not appropriate — for example, only one test was administered or the evaluation was based solely upon observation of your child — you can ask the school system to pay for what is known as an Independent Educational Evaluation (IEE). There are usually strict guidelines for obtaining an IEE at the school's expense. Ask the school about its IEE policy. Of course, you can always have your child evaluated independently and pay for the evaluation yourself. Whether the school pays for the IEE or whether you do, the results of this second evaluation must be taken into account in determining whether or not your child has a disability and, thus, is eligible for special education services through the school.

If evaluation results still indicate that your child's problems in learning to read are not caused by a disability, your child will not be eligible for special education services through the public school. However, most schools have services available for students who are having trouble reading. Your child may be enrolled in a remedial reading program or work with a reading resource teacher to improve his or her skills. You may also wish to contact some of the organizations dealing with literacy (see Organizational Resources, page 11).

Suppose, however, that the results of testing show that your child *does* have a learning disability. In this case, your child will be eligible to receive special education services. Parents and school personnel then meet to discuss the results of the evaluation and to develop what is known as an Individualized Education Program (IEP). The IEP will describe the level at which your child is currently performing, as well as identify the specific services or instruction your child will receive to address his or her specific needs. (More information about special education and the IEP process is available by contacting *NICHCY*.) Classroom accommodations are also possible and can help a student compensate for his or her learning disability. Accommodations can include:

- Taped textbooks available through Recording for the Blind (see the description on page 11);
- Extended time on tests;
- Tutoring;
- Use of a notetaker, for students who have trouble listening in class and taking notes;
- Use of a scribe during test taking, for students who have trouble writing but who can express their answers verbally to the scribe, who writes down the responses;
- Use of a reader during test taking, for students who have trouble reading test questions;
- Tape recording of class lectures; and
- Testing in a quiet place, for students who are easily distracted.

The suggestions presented in the remainder of this article focus upon what parents can do to help a child with a learning disability learn and function within the home.

- *Learn more about learning disabilities.* This information can help you understand that your child does not learn in the same way as other people do. Find out as much as you can about the problems your child has with learning, what types of learning tasks will be hard for your child, what sources of help are available, and what you can do to make life and learning easier for your child. You can find the information you need by reading many of the publications listed at the end of this document, or by contacting the national organizations that are listed.
- *Become an unobtrusive detective.* Look for clues that can tell you how your child learns best. Does he or she learn best through looking, listening, or touching? What is your child's weakest approach to learning? Also pay attention to your child's interests, talents, and skills. All this information can be of great help in motivating and fostering your child's learning.
- *Teach through your child's areas of strength.* For example, he or she may have great difficulty reading for information but readily understand when listening. Take advantage of that strength. Rather than force reading, which will present your child with a "failure" situation, let your child learn new information by listening to a book on tape or watching a videotape.
- *Respect and challenge your child's natural intelligence.* He or she may have trouble reading or writing, but that doesn't mean learning can't take place in many other ways. Most children with learning disabilities have average or above average intelligence that can be engaged and challenged through using a multisensory approach. Taste, touch, seeing, hearing, and moving are valuable ways of gathering information.
- *Remember that mistakes don't equal failure.* Your child will have the tendency to see his or her mistakes as huge failures. You can model, through good-humored acceptance of your own mistakes, that mistakes can be useful. They can lead to new solutions. They are not the end of

the world. When your child sees you taking this approach to mistakes — your own and the mistakes of others — he or she can learn to view his or her mistakes in the same light.

- *Recognize that there may be some things your child won't be able to do or will have lifelong trouble doing.* Help your child to understand that this doesn't mean he or she is a failure. After all, everyone has something they can't do. Capitalize on the things your child *can* do.
- *Be aware that struggling with your child over reading, writing, and homework can draw you into an adversarial position with your child.* The two of you will end up angry and frustrated with each other, which sends the message to your child that, yet again, he or she has failed. You can contribute positively to your child's schooling by participating actively in the development of your child's Individualized Education Program (IEP) and by sharing with the school the special insights about your child that only you as a parent have.
- *Use television creatively.* Television, or videos, can be a good medium for learning. If the child is helped to use it properly, it is not a waste of time. For example, your child can learn to focus, sustain attention, listen carefully, increase vocabulary, and see how the parts fit together to make a whole. You can augment learning by asking questions about what was seen. What happened first? Then what happened? How did the story end? Such questions encourage learning of sequence, an area that causes trouble for many LD children. Be patient, though. Because your child does not see or interpret the world in the same way you do, progress may be slow.
- *Make sure books are at your child's reading level.* Most children with learning disabilities will be reading below grade level. To experience success at reading, then, it's important that they have books to read that are on their reading level (rather than their age level). Foster reading by finding books on topics of interest to your child or by reading to him. Also let your child choose his or her own books to read.
- *Encourage your child to develop his or her special talent.* What is your child good at? What does he or she especially enjoy? Encouraging your child to pursue areas of talent lets him or her experience success and discover a place to shine.

Adults With Reading or Learning Problems

Adults who have trouble reading or learning usually have had these problems since they were children. Their problems may stem from having a learning disability that went undetected or untreated as a child. If an adult has a learning disability, he or she will experience many of the difficulties described in Dr. Larry Silver's article about learning disabilities in children (see page 2). The difference for adults who have learning problems is that they no longer spend their day in school and cannot turn to the public school system for evaluation and special instruction. They may not know why they have trouble learning, and don't know where to go to find out.

Help is available. It's important, however, to know what is causing the adult's problem with reading or learning. Knowing the reason makes it possible for the individual to get the kind of help he or she needs. The problem may arise because the person has a learning disability. If so, then the person needs to work with instructors who know about learning disabilities. He or she needs to receive instruction designed for individuals with learning disabilities. But not all reading or learning problems are caused by learning disabilities. Perhaps as a child the person did not get enough basic instruction to build the foundation that leads to skilled reading and learning. Becoming involved in a literacy program might meet this person's needs.

The first step, then, is to find out if the learning problems are caused by the presence of a learning disability. A thorough assessment can give clues as to whether or not a learning disability exists and can pinpoint areas of strength and difficulty. An overview of the diagnostic process is given on the next page. This overview is adapted from the HEATH Resource Center's publication called *Resources for Adults with Learning Disabilities*.

> *"The child with learning disabilities feels isolated from the parent's culture and learns to hide her "shameful secret." And, of course, as the child carries this secret into adulthood and begins to face adult responsibilities, the burden of it grows and grows. Surprisingly, when the secret is finally revealed, it turns out not to be shameful at all. Once a person openly acknowledges having a learning disability, she finds it possible to relax and request help and support. Only after openly acknowledging the learning disability is the person free to work on improving her ability to learn."*
>
> **NICHCY thanks Sally L. Smith for her permission to reprint this quote from her (1991) book *Succeeding Against the Odds: Strategies and Insights from the Learning Disabled* (p.20). Information on how to obtain this excellent book can be found at the top of page 8 in this guide.**

Adults with Learning Disabilities: Assessing the Problem

Adapted with permission from the HEATH Resource Center

When adults suspect they may have a learning disability, they often begin a search for solutions. They may have difficulty in locating resources to diagnose the disability. For many individuals, obtaining a diagnosis can involve locating one or more professionals to select, perform, and interpret diagnostic tests.

Why is Diagnostic Testing Necessary?

These tests are needed because:

- Obtaining accurate diagnostics is the first step in overcoming the effects of a learning disability.
- Learning with a learning disability requires different learning strategies.

What is the Diagnostic Process for Adults?

The diagnostic process for adults with learning disabilities is different from diagnosis and testing for children. While diagnosis for children and youth is tied to the education process, diagnosis for adults is more directly related to problems in employment, life situations, and education. An adult will need to find a diagnostician experienced in working with adults and who is oriented to adult school- and work-related learning needs. The assessment process will include a diagnosis and an evaluation to decide on possible choices for treatment.

The diagnosis identifies the type of specific learning disability by showing strengths and weaknesses in the way an individual learns and uses information. Both informal and formal activities are used in this process. For example, information may be collected about the person's life and academic history and why there is a need for the testing. More formal activities would include measuring learning/work style, such as visual memory or memory for numbers.

An evaluation can then be offered, suggesting ways to overcome some of the effects of the disability. This may include strengthening skills by working with someone who takes into account the way the individual learns best.

Until recently, it was not widely recognized that learning disabilities have influenced the lives of adults, especially those whose conditions were not diagnosed during school years. It is now clear that adults should be evaluated in a manner related to their age, experience, and career objectives.

How Do You Find Someone to Perform the Testing?

You may be wondering how to find a professional qualified to conduct adult assessments. Several local agencies can either perform the tests or refer you to diagnosticians for adults within the community. Agencies to contact for information include:

- The public school system - Ask about Adult Education programs conducted through the school system and the availability of testing;
- Adult Literacy Programs or Literacy Councils - These may be listed in your local telephone book. If not, call the national literacy organizations listed under Organizational Resources on page 11 and ask what programs are available in your community;
- Learning Disability Association in your area, often listed in the telephone book with the name of the city or county first;
- Counseling or Study Skills Centers at a local community college;
- Guidance Counselors in high school;
- Orton Dyslexia Society (see description on page 11);
- Special Education Programs at a local public school or university; and
- Vocational Rehabilitation Agency in your state or county.

These organizations or individuals may also be able to put you in touch with an educational therapist or learning specialist in private practice who can perform and interpret the tests you need.

Questions to Ask Evaluators

- Have you tested many adults with learning disabilities?
- What is the cost of the testing? What does this cost cover?
- Can insurance cover the costs? Are there other funding sources? Can a payment program be worked out?
- How long does the testing take?
- Will there be a written report of the assessment? Will I be able to meet with you to discuss the results?
- Will our discussion give me information regarding why I am having trouble with my school, job, or life at home?
- Will you also give me ideas on how to improve (remediate) my areas of disability and how to get around (compensate for) my disabilities?
- Will the report make recommendations about where to go for immediate help?
- If there are additional questions, are you available for more consultation? If so, what are the charges?

This overview of the diagnostic process has been adapted from the HEATH Resource Center's publication called *Resources for Adults with Learning Disabilities* (1989; 1991). You can obtain a free copy of this publication by contacting the HEATH Resource Center, American Council on Education, One Dupont Circle, Suite 800, Washington, DC 20036-1192. *NICHCY* thanks Rhona Hartman, Director of HEATH, for her permission to adapt and reprint this material.

FYI: Information Resources from NICHCY's Database

The following information was selected from numerous resources abstracted in *NICHCY's* database. If you know of a group which provides information about reading problems or learning disabilities to families, professionals, or the general public, or which develops materials in this area, please send this information to NICHCY for our resource collection and database. We will appreciate this information and will share it with others who request it.

You may be able to obtain many of the documents listed below through your local library. Whenever possible, we have included the publisher's address in case the publication is not available in your area. Please note that the prices of materials and the addresses of publishers and organizations are subject to change without prior notice. *If you are interested in obtaining a resource listed in this document, it is a good idea to contact the publisher or organization and obtain information on ordering, payment procedures, and shipping and handling charges.*

Additional publications and information are also available from the clearinghouses and national organizations listed. If you experience difficulty in locating these documents or organizations, or if you would like additional assistance, please contact *NICHCY*. Finally, you may find *NICHCY's State Resource Sheet* for your state or territory helpful in contacting other resources of information.

Readings for Parents

Armstrong, T. (1987). *In their own way: Discovering and encouraging your child's personal learning style.* Los Angeles: Jeremy P. Tarcher, Inc. (Available from Publishers Book and Audio, P.O. Box 120159, Staten Island, NY 10312. Telephone: 1-800-288-2131. Price: $8.95.)

Brent, C. (1988). *Understanding your learning disability.* Columbus, OH: Author. (This 15-page booklet is available from Cheri Brent, Supervisor, Franklin County Department of Education, 1717 Alum Creek Drive, Columbus, OH 43207. Telephone: (614) 445-3750. Price: $2.00.)

Cordoni, B. (1990). *Living with a learning disability* (rev. ed.). Carbondale, IL: Southern Illinois University Press. (Available from Southern Illinois University Press, P.O. Box 3697, Carbondale, IL 62902. Telephone: (618) 453-2281. Price: $15.95.)

Cummings, R.W., & Maddux, C.D. (1985). *Parenting the learning disabled: A realistic approach.* Springfield, IL: Charles C. Thomas. (Available from Charles C. Thomas, 2600 South First Street, Springfield, IL 62794. Telephone: (217) 789-8980. Price: $26.50.)

Fowler, M.C. (1990). *Maybe you know my kid: A parent's guide to identifying, understanding, and helping your child with ADHD.* New York: Birch Lane Press. (Available from Birch Lane Press, 120 Enterprise Avenue, Seacaucus, NJ 07094. Telephone: 1-800-447-2665. Price: $12.00.)

Fowler, M.C. (1991, September). Attention deficit disorder. *NICHCY Briefing Paper*, 1-8. (Available from NICHCY, P.O. Box 1492, Washington, DC 20013-1492. Telephone: 1-800-999-5599.)

Gehret, J. (1990). *The don't-give-up kid and learning differences.* Fairport, NY: Verbal Images Press. [Available from Verbal Images Press, 19 Foxhill Drive, Fairport, NY 14450. Price: $10.00 (includes shipping). Phone orders: 1-800-233-9273. Price: $12.50 (includes shipping).]

Greene, L.J. (1987). *Learning disabilities.* New York: Fawcett Book Group. (Available from Fawcett Book Group, 400 Hahn Road, Westminster, MD 21157. Telephone: 1-800-733-3000. Mention that the ISBN number of this book is 449-90253-6. Price: $9.95.)

Janover, C. (1988). *Josh: A boy with dyslexia.* Burlington, VT: Waterfront. (Available from Waterfront Books, 98 Brookes Avenue, Burlington, VT 05401. Telephone: 1-800-639-6063. Price: $7.95.)

National Library Service for the Blind and Physically Handicapped. (1990, March). *Learning disabilities: National information and advocacy organizations.* Washington, DC: Library of Congress. (Available from the National Library Service for the Blind and Physically Handicapped, the Library of Congress, Washington, DC 20542. Telephone: (202) 707-5100. Ask for Publication No. 90-1.)

Silver, L. (1991). *The misunderstood child: A guide for parents of children with learning disabilities* (2nd ed.). New York: McGraw Hill. (Available from TAB Books, Blue Summit, PA 17294. Telephone: (717) 794-2191. Price: $9.95.)

Smith, S.L. (1981). *No easy answers: The learning disabled child.* New York: Bantam. (Available from Bantam, 666 Fifth Avenue, New York, NY 10103. Telephone: 1-800-223-6834. Price: $4.95.)

Smith, S.L. (1991). *Succeeding against the odds: Strategies and insights from the learning disabled.* Los Angeles: Jeremy P. Tarcher, Inc. (Available from Publishers Book and Audio, P.O. Box 120159, Staten Island, NY 10312. Telephone: 1-800-288-2131. Price: $15.95. Also available on cassette tape through the loan program of Recording for the Blind (RFB) in Princeton, NJ. For information about how to quality to borrow the book on tape, see the description of "Recording for the Blind" in the Organizational Resources below.)

Readings for Adults

Brent, C. (1988). *Understanding your learning disability.* Columbus, OH: Author. (This 15-page booklet is available from Cheri Brent, Supervisor, Franklin County Department of Education, 1717 Alum Creek Drive, Columbus, OH 43207. Telephone: (614) 445-3750. Price: $2.00.)

Cordoni, B. (1990): *Living with a learning disability* (rev. ed.). Carbondale, IL: Southern Illinois University Press. (Available from Southern Illinois University Press, P.O. Box 3697, Carbondale, IL 62902. Telephone: (618) 453-2281. Price: $15.95.)

Gerber, P.J., & Reiff, H.B. (1991). *Speaking for themselves: Ethnographic interviews with adults with learning disabilities.* Ann Arbor, MI: University of Michigan Press. (Available from the University of Michigan Press, P.O. Box 1104, Ann Arbor, MI 48106-1104. Telephone: (313) 764-4392. Price: $29.95.)

Jones, R.L. (Ed.). (1983). *Reflections on growing up disabled.* Reston, VA: Council for Exceptional Children. (Available from the Council for Exceptional Children, Publications Department, 1920 Association Drive, Reston, VA 22091. Telephone: (703) 620-3660. Price: $13.50.)

Massey-Henderson, M. (1988). *Learning intervention strategies: A handbook for learning disabled adults.* Oakland, CA: Author. (This handbook is designed to help high school and college students learn how to learn. It is available from Marylou Massey-Henderson, 3757 Elston Avenue, Oakland, CA 94602. Telephone: (510) 482-0932. Price: $25.00.)

Scheiber, B., & Talpers, J. (1987). *Unlocking potential: College and other choices for learning disabled people. A step by step guide.* Bethesda, MD: Adler and Adler. (Available from Woodbine House, 5615 Fishers Lane, Rockville, MD 20852. Telephone: 1-800-843-7323. Price: $12.95.)

Smith, S.L. (1991). *Succeeding against the odds: Strategies and insights from the learning disabled.* Los Angeles: Jeremy P. Tarcher, Inc. (Available in print from Publishers Book and Audio, P.O. Box 120159, Staten Island, NY 10312. Telephone: 1-800-288-2131. Price: $18.95. Also available on cassette tape through the loan program of Recording for the Blind (RFB) in Princeton, NJ. For information about how to qualify to borrow the book on tape, see the description of "Recording for the Blind" in the Organizational Resources below.)

Readings for Educators and Other Service Providers

Banbury, M.M. (1989). *What are learning disabilities?* Washington, DC: American Federation of Teachers. (Available from the American Federation of Teachers, AFL-CIO, 555 New Jersey Avenue N.W., Washington, DC 20001. Telephone: (202) 879-4400. Ask for Item #438. Price: $1.00.)

Biller, E.F. (1988). *Understanding adolescents and young adults with learning disabilities: A focus on employability and career placement. A guide for rehabilitation counselors.* Springfield, IL: Charles C. Thomas. (Available from Charles C. Thomas, 2600 South First Street, Springfield, IL 62794. Telephone: (217) 789-8980. Price: $23.75.)

Council for Exceptional Children. (1989, December). *Pre-referral intervention for students with learning and behavior problems.* Reston, VA: Author. (This computerized supersearch is a bibliography of other materials in print. It includes introductory material and up to 150 abstracts. Available from the Council for Exceptional Children, 1920 Association Drive, Reston, VA 22091. Telephone: (703) 620-3660. Ask for Publication C574. Price: $22.50.)

Council for Exceptional Children. (1990, February). *Teaching learning disabled adolescents.* Reston, VA: Council for Exceptional Children. (This computerized search is a bibliography of other materials in print. It includes 124 abstracts. Available from the Council for Exceptional Children, 1920 Association Drive, Reston, VA 22091. Ask for Publication C567. Price: $18.00.)

Council for Exceptional Children. (1990, September). *Teaching learning disabled elementary school children.* Reston, VA: Author. (This computerized search is a bibliography of other materials in print. It lists 97 abstracts of resources available in ERIC and ECER databases. Ask for Publication C566. Price: $18.00.)

Council for Exceptional Children. (1991, March). *Underachieving gifted.* Reston, VA: Author. (This computerized search is a bibliography of other materials in print. It includes 171 abstracts. Available from the Council for Exceptional Children, 1920 Association Drive, Reston, VA 22091. Telephone: (703) 620-3660. Ask for Publication C565. Price: $18.00.)

Kirk, S.A., & Chalfant, J.C. (1984). *Academic and developmental learning disabilities.* Denver, CO: Love. (Available from Love Publishing Company, 1777 South Bellaire Street, Denver, CO 80222. Telephone: (303) 757-2579. Price: $36.95.)

Kronick, D. (1989). *Learning disabilities.* Philadelphia: Grune and Stratton. (Available from Simon and Schuster Direct Mail Center, Order Processing Department, P.O. Box 11071, Des Moines, IA 50336-1071. Telephone: (515) 284-6751. Price: $40.95.)

Lerner, J. (1988). *Learning disabilities: Theories, diagnosis, and teaching strategies* (5th ed). Boston, MA: Houghton-Mifflin. (Available from Houghton-Mifflin, Attention: College Department, Wayside Road, Burlington, MA 01803. Telephone: 1-800-225-1464. Mention that the ISBN number of this book is: 0-395-369134. Price: $47.56.)

Mangrum, C.T., & Strichart, S.S. (1988). *College and the learning disabled student: Program development* (2nd ed.). Philadelphia: Grune and Stratton. (Available from Simon and Schuster Direct Mail Center, Order Processing Department, P.O. Box 11071, Des Moines, IA 50336-1071. Telephone: (515) 284-6751. Price: $36.95.)

Massey-Henderson, M. (1988). *Learning intervention strategies: A handbook for learning disabled adults.* Oakland, CA: Author. (This handbook is designed to help high school and college students learn how to learn. Available from Marylou Massey-Henderson, 3757 Elston Avenue, Oakland, CA 94602. Telephone: (510) 482-0932. Price: $25.00.)

McCarney, S., & Cummins, K. (1988). *The pre-referral intervention manual: The most common learning and behavior problems encountered in the education environment.* Columbia, MO: Hawthorne. (Available from Hawthorne Educational Services, 800 Gray Oak Drive, Columbia, MO 65201. Telephone: 1-800-542-1673. Price: $30.00.)

Mercer, C.D., & Mercer, A.R. (1989). *Teaching students with learning problems* (3rd ed.). Columbus, OH: Merrill. (Available from Macmillan Publishing Company, 100 Front Street, Box 500, Riverside, NJ 08075-7500. Telephone: 1-800-257-5755. Price: $40.00.)

Ngandu, K.M. (1988). *Dyslexia and severe reading disability.* Washington, DC: American Federation of Teachers. (Available from the AFT Teachers' Network for Education of the Handicapped, 555 New Jersey Avenue N.W., Washington, DC 20001. Telephone: (202) 879-4400. Ask for Item #440. Price: $1.00.)

Nolting, P. (1991). *Math and the learning disabled student: A practical guide for accommodations.* Pompano Beach, FL: Academic Success Press. (Available from Academic Success Press, P.O. Box 2567C, Pompano Beach, FL 33072. Telephone: (305) 785-2034. Price: $14.95.)

Smith, S.L. (1981). *No easy answers: The learning disabled child.* New York: Bantam. (Available from Bantam, 666 Fifth Avenue, New York, NY 10103. Telephone: 1-800-223-6834. Price: $4.95.)

Smith, S.L. (1991). *Succeeding against the odds: Strategies and insights from the learning disabled.* Los Angeles: Jeremy P. Tarcher, Inc. (Available from Publishers Book and Audio, P.O. Box 120159, Staten Island, NY 10312. Telephone: 1-800-288-2131. Price: $18.95. Also available on cassette tape through the loan program of Recording for the Blind (RFB) in Princeton, NJ. For information about how to qualify to borrow the book on tape, see the description of "Recording for the Blind" in the Organizational Resources below.)

Ungerleider, D.F. (1985). *Reading, writing, and rage: The terrible price paid by victims of school failure.* Rolling Hills Estates, CA: B.L. Winch. (Available from B.L. Winch/Jalmar Press, 45 Hitching Post Drive, Building 24B, Rolling Hills Estates, CA 90274. Telephone: 1-800-662-9662, or (310) 547-1240. Price: $16.95.)

Organizational Resources

This section lists organizations that can be of help to parents who have a child with a reading problem or learning disability, to adults who would like to improve their reading or learning skills, and to educators and other professionals who work with students who are having difficulty learning. Some organizations provide information and referral that is best suited for parents. Others work primarily with adults with learning disabilities. Still others provide information targeted for teachers and other service providers. Under each name and address, you will see the line "Resource Useful To," followed by the groups (parents, adults, or educators) who will find this organization most helpful.

NATIONAL CLEARINGHOUSES AND GOVERNMENT AND STATE AGENCIES

Clearinghouse on Adult Education and Literacy
Division of Adult Education and Literacy
U.S. Department of Education
400 Maryland Avenue S.W.
Washington, DC 20202-7240
Telephone: (202) 732-2270

Resource Useful To: Adults; Educators (working with adults)

This Clearinghouse can provide the adult education community with resources in adult education, including putting adults in contact with the Office of Adult Education within their state. Fact sheets, bibliographies, directories, and other publications are available related to adults who have special learning needs.

ERIC Clearinghouse on Handicapped and Gifted Children
Council for Exceptional Children
1920 Association Drive
Reston, VA 22091-1589
Telephone: (703) 620-3660

Resource Useful To: Parents; Educators (of school-age children)

This ERIC Clearinghouse makes available the following publications on learning disabilities: *Digest on Learning Disabilities* (Digest Number E407) and an annotated bibliography called *Digest on Readings about Learning Disabilities* (Digest Number E465). Both of these publications are provided free of charge. Other information on learning disabilities is also available.

ERIC Clearinghouse on Reading and Communication Skills (ERIC/RCS)
Indiana University, Smith Research Center
2805 East 10th Street, Suite 150
Bloomington, Indiana 47408-2698
Telephone: (812) 855-5847

Resource Useful To: Parents; Adults; Educators

The Clearinghouse is concerned with the acquisition of functional competence in reading, writing, speaking, and listening at all educational levels and in all social contexts. The Clearinghouse makes available bibliographies on a variety of reading topics, including learning disabilities and reading. An offshoot of the Clearinghouse is the Family Literacy Center, whose purpose is to encourage parents to participate in their children's academic development while simultaneously improving their own literacy. A monthly "audio journal" called *Parents and Children Together* is available from the Family Literacy Center. Subscriptions are $75.00 a year for 12 issues. Each issue is filled with suggestions for involving children in reading, practical reading activities that parents can do with their children, recommendations for books to read and, of course, a read-along story accompanied by a cassette tape. A free sample of this material is available upon request.

HEATH Resource Center
One Dupont Circle, Suite 800
Washington, DC 20036-1193

Resource Useful To: Parents (of young LD adults); Adults

HEATH is a national clearinghouse on postsecondary education for individuals with disabilities. HEATH distributes a publication called *Resources for Adults with Learning Disabilities* and has information on how and where adults with learning disabilities can get training after high school. This includes information about vocational preparation programs, adult education, and college.

National Clearinghouse on Literacy Education (NCLE)
Center for Applied Linguistics
1118 22nd Street N.W.
Washington, DC 20037
Telephone: (202) 429-9292

Resource Useful To: Educators (of adults with limited English proficiency)

NCLE is the only national clearinghouse for adult English as a second language (ESL) and literacy information. NCLE collects, analyzes, and abstracts documents on literacy education for adults with limited English proficiency (LEP) and out-of-school youth. Included are research reports, instructional and assessment materials, program descriptions and evaluations, and teacher/tutor training guides. Educators can call to find out resources available for working with LEP adults and out-of-school youth with literacy problems. NCLE maintains a resource center that includes a database of over 5,000 individuals and literacy programs working with LEP adults.

National Information Center for Children and Youth with Disabilities (NICHCY)
P.O. Box 1492
Washington, DC 20013-1492
Telephone: 1-800-999-5599; (703) 893-6061 (Local); (703) 893-8614 (TDD)

Resource Useful To: Parents; Educators

NICHCY can provide parents with information about special education and the rights children and youth with disabilities have under the law. NICHCY can also provide parents and others with a *State Resource Sheet*, useful for identifying resources within their state. This includes names, addresses, and telephone numbers of state agencies, disability organizations, and parent groups serving individuals with disabilities and their families. A variety of other publications on disability issues is available free of charge. A *Publications List* is available upon request.

National Library Service for the Blind
and Physically Handicapped (NLS)
Library of Congress
1291 Taylor Street N.W.
Washington, DC 20542
Telephone: (202) 707-5100

Resource Useful To: Parents; Adults

Many individuals with learning disabilities may be able to borrow "talking books" (books on tape) from NLS, but they must first establish their eligibility for the program. Call or write NLS and ask for an application form for reading disabilities and *Talking Books and Reading Disabilities*, a factsheet outlining the eligibility requirements for persons with learning disabilities. Once eligibility is established, the person can borrow, on tape, most of the same books that public libraries make available in print.

State Department of Education
Consult your local telephone directory for
the office in your state.

Resource Useful To: Adults, Educators

The State Department of Education in each state should have a department concerned with adult education or literacy. This office can usually refer adult callers to adult education or literacy programs within their community. Technical assistance, information, and referral may be available to educators working with school-age children with learning disabilities or with adults with literacy concerns.

Vocational Rehabilitation Office
Consult your local telephone directory
for the office in your vicinity.

Resource Useful To: Adults

Through the Vocational Rehabilitation system, adults with learning disabilities may be able to get information and referral. Services may also be available, such as literacy and job training.

NATIONAL LEARNING DISABILITIES ORGANIZATIONS

Council for Learning Disabilities (CLD)
P.O. Box 40303
Overland Park, KS 66204
Telephone: (913) 492-8755

Resource Useful To: Educators

The Council for Learning Disabilities provides services to professionals who work with individuals with learning disabilities. Members include educators, diagnosticians, psychologists, physicians, optometrists, and speech, occupational, and physical therapists. All members receive the *Learning Disability Quarterly*, as well as the *LD Forum*, a teacher-oriented newsletter.

Division for Learning Disabilities
Council for Exceptional Children
1920 Association Drive
Reston, VA 22091
Telephone: (703) 620-3660

Resource Useful To: Educators

The Division for Learning Disabilities is one of the many special organizations within the Council for Exceptional Children. DLD publishes its own journal (*Learning Disabilities Research and Practice*) and newsletter. Teachers and other service providers can contact DLD about learning disabilities, publications, and membership.

Learning Disabilities Association of America (LDA)
4156 Library Road
Pittsburgh, PA 15234
Telephone: (412) 341-1515 or (412) 341-8077

Useful Resource for: Parents; Adults; Educators

The Learning Disabilities Association of America (LDA) has 50 state affiliates with more than 775 local chapters. The national office has a resource center of over 500 publications for sale. It also operates a film rental service. Publication topics cover the range of issues associated with learning disabilities. There are many publications available regarding the LD adolescent or young adult, behavior modification, children's books, dyslexia, early childhood, ADD or ADHD, and learning disabilities associated with auditory, fine motor, language, math, social perception, spelling, and/or visual problems. Many of LDA's publications are specifically written for parents. Call the national LDA office to receive a free information packet and referral to the nearest local chapter.

National Center for Learning Disabilities
99 Park Avenue
New York, NY 10016
Telephone: (212) 687-7211

Resource Useful To: Parents; Educators

The National Center for Learning Disabilities (NCLD) is a national, not-for-profit organization committed to improving the lives of millions of Americans affected by learning disabilities. Services include: raising public awareness and understanding; national information and referral; educational programs; and legislative advocacy. NCLD provides educational tools to heighten understanding of learning disabilities, including: the annual publication called *THEIR WORLD*; quarterly newsletters; informative articles; specific state-by-state resource listings (e.g., schools and diagnostic clinics); and a new, five-part video series entitled *We Can Learn*.

National Network of Learning Disabled Adults
P.O. Box 32611
Phoenix, AZ 85064-2611
Telephone: (602) 941-5112

Resource Useful To: Adults

The National Network of Learning Disabled Adults is a clearinghouse that helps LD adults find and network with each other in their communities. A list of support groups around the country is available upon request. The organization also produces a quarterly newsletter called *National Networker*, which is full of valuable information for adults with learning disabilities.